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TWENTY-FOURTH BIENNIAL REPORT

OF THE

STATE BOARD OF HEALTH

OF

CALIFORNIA

FOR THE

Fiscal Years from July 1, 1914, to June 30, 1916



**CALIFORNIA
STATE PRINTING OFFICE
1916**

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LETTER OF TRANSMITTAL.

OFFICE OF CALIFORNIA STATE BOARD OF HEALTH,
SACRAMENTO, September 14, 1916.

To His Excellency, HIRAM W. JOHNSON,
Governor of California.

DEAR SIR: In accordance with the state law, I herewith transmit to you the twenty-fifth biennial report of the State Board of Health for the sixty-sixth and sixty-seventh fiscal years.

Respectfully submitted,

W. A. SAWYER,
Secretary of State Board of Health.

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REPORT OF THE SECRETARY.

The work of the State Board of Health is exceedingly diverse. Its seven bureaus cover fields which range from sanitary engineering to the education of nurses, and from the control of epidemics to the analyses of foods and drugs. Each of these bureaus has submitted a report, published herewith, for the biennial period ending June 30, 1916. The facts and figures presented show the extent and growth of the work and indicate to what degree the board has accomplished its purpose of conserving the health of the people of California.

This report covers a period of two years, from July 1, 1914, to June 30, 1916. Surgeon Donald H. Currie, on leave from the United States Public Health Service, was secretary and executive officer for the first fourteen months of this period. On August 31, 1915, he resigned to return to duty in the public health service. On September 4, 1915, the present secretary took office.

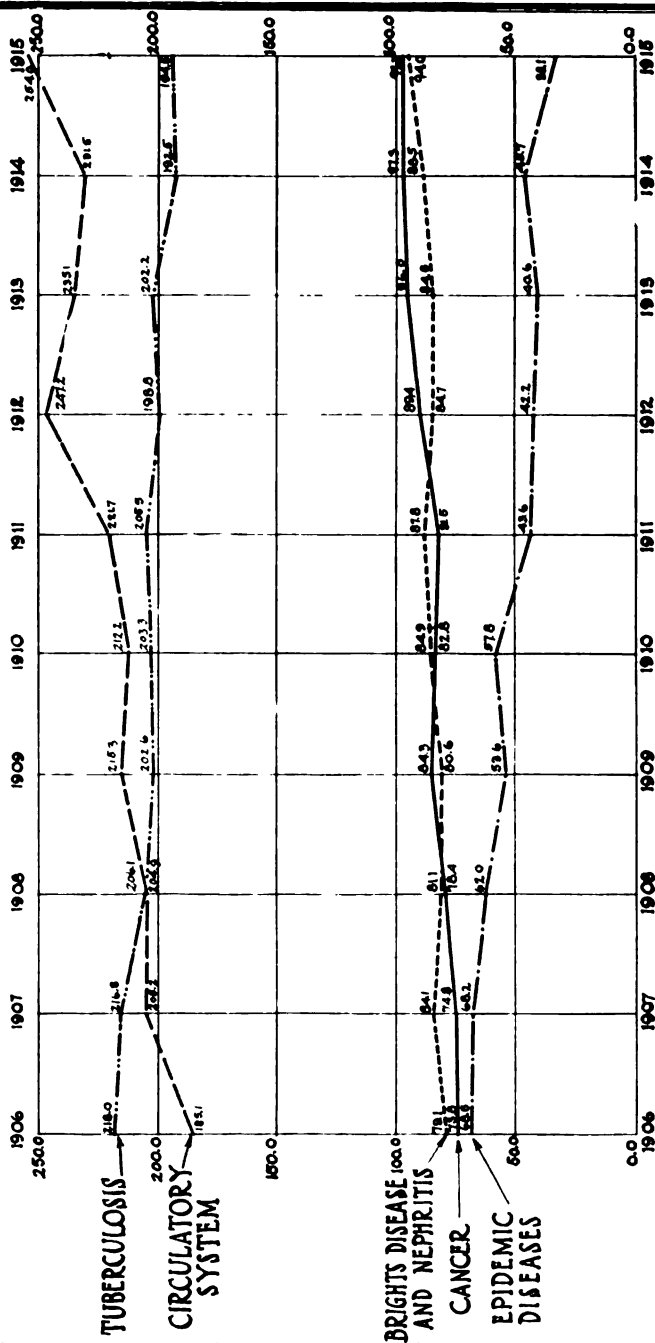
The Health of the State.

As the records of deaths are at the present time more accurate than those of cases of disease, the death rates form the best basis for comparing the health conditions of the state at different periods. The deaths from causes classed as "epidemic diseases" have fallen rapidly in number during the past ten years. It is this group of diseases which has been most persistently and successfully attacked by sanitarians.

The total death rate has also diminished, but not at an equal rate, for the great decrease in the mortality from the epidemic diseases has been in part offset by an actual increase in deaths from the more chronic diseases of middle and advanced age. It follows that the State Board of Health should in future give increasing attention to the causes and prevention of these diseases. While the diseases of this group seem at present less amenable to control measures than the acute infectious diseases, they are doubtless in large part caused or aggravated by preceding preventable infectious diseases, poisonings, or injurious habits. In discovering and controlling the underlying causes of the serious chronic diseases of middle and later life, public health officials can still further lengthen the average span of life, but much greater benefits will be the lessened frequency of incapacity through illness, the increased efficiency which comes with good health, and the more general sense of well-being which is an expression of the proper functioning of the healthy body.

The following chart shows graphically the trend of the death rates for various diseases and groups of diseases. Attention is called to the rapid fall in the number of deaths from epidemic diseases and the definite rise in the number from diseases of the circulatory system. The death rate from tuberculosis shows a very gradual decline, but is still far above the average for the United States.

CALIFORNIA DEATH RATES PER 100,000 POPULATION FOR CERTAIN PRINCIPAL CAUSES, 1906-1915.



State Health Districts.

The state of California is altogether too large to have a highly successful health administration centered entirely in Sacramento and Berkeley. Under the present system the requests of health officers for assistance can be met only when the situation is so urgent as to warrant sending a man from Sacramento or Berkeley. The result is a necessary relative neglect of the distant parts of the state, and a regrettable lack of state cooperation in many important local health matters.

The need for districts has been partially recognized by the establishment in past years of branches of the Hygienic Laboratory in Los Angeles, Fresno, and Sacramento, and the maintenance of an office by an inspector of the Bureau of Foods and Drugs in Los Angeles. But the administration of the state health laws in general is still crippled for lack of an organization which will divide the state into districts and place a state health officer in each.

Such a health officer would be held responsible for the health conditions of his district. He would be constantly in touch with local health officers and would assist and direct them in the enforcement of the state health laws and the regulations of the State Board of Health. At the time of epidemics he would take charge of control measures and decide whether the more highly specialized experts of the board were needed. He would inspect the sanitary conditions of cities and rural districts, order the correction of insanitary conditions, act as local field representative for various bureaus of the board, and bring about more nearly complete disease and birth registration. He would consult with local communities about the need for the enactment and enforcement of health ordinances. He would come quickly to the assistance of health officers when consultations were needed about diagnosis and control measures in outbreaks of communicable disease, such as infantile paralysis, scarlet fever, diphtheria, and smallpox.

For these reasons the State Board of Health regards the proposed amendment to the Political Code, which would establish not less than six health districts and appoint the same number of state district health officers, as the most important health measure to come before the next legislature.

In addition to the state district health officers the same law provides for ten sanitary inspectors to carry on field work for the board. These men are needed to inspect summer resorts, make sanitary surveys of towns, improve rural hygiene, especially where typhoid fever or malaria are prevalent, and to do intensive control work wherever there are serious outbreaks of any communicable disease. These men could be concentrated at any point on short notice and could put control measures into effect quickly, saving many lives and preventing the

demoralization which results when the people see that an epidemic is spreading uncontrolled in their community.

Six health districts are obviously few for a large state, and the area of each district will be very great. In Massachusetts the state is divided into eight districts. New York State has twenty, Maryland has ten, and Illinois has made a start with only five. California can receive great benefit from organization into six districts, and this number can readily be increased in future years, when increases in population makes the districts too unwieldy or the rise in standards of public health administration requires more intensive health service from the state.

In the proposed bill the exact boundaries of the districts are left to the State Board of Health so that they can be altered as experience shows need for a change, but the chart following will show the general scheme of subdivision which led the State Board of Health to decide that the minimum number of districts should be six.

The following table shows the population of each proposed district, inclusive and exclusive of cities of over 25,000 people. The large cities will need relatively little attention from the state district health officers, as most of them have well-organized health departments.

Population of Proposed State Health Districts.

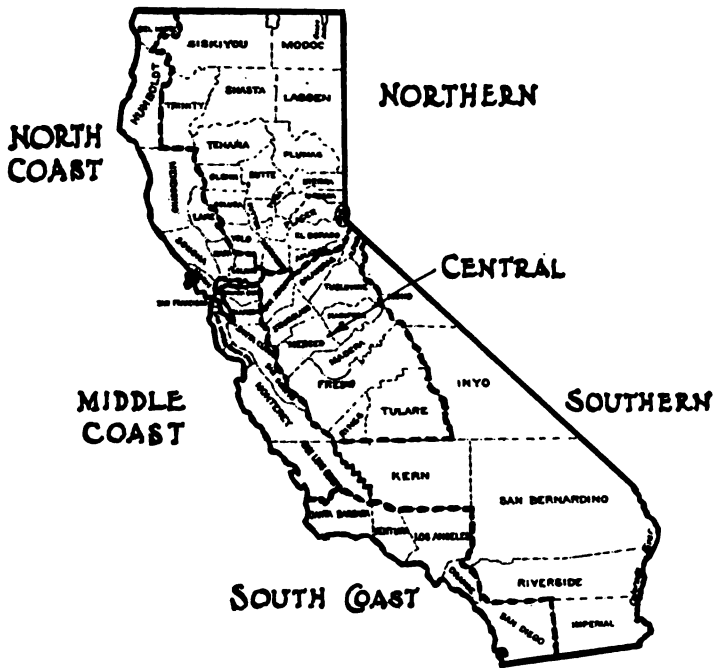
<i>North Coast.</i>		<i>Northern.</i>	
Total population	216,416	Total population	278,263
Population cities over 25,000....	-----	Population cities over 25,000....	64,806
Population outside larger cities..	216,416	Population outside larger cities..	213,457
<i>Middle Coast.</i>		<i>Central.</i>	
Total population	1,068,729	Total population	310,613
Population cities over 25,000....	811,738	Population cities over 25,000....	53,216
Population outside larger cities..	256,991	Population outside larger cities..	257,397
<i>South Coast.</i>		<i>Southern.</i>	
Total population	934,075	Total population	154,511
Population cities over 25,000....	585,889	Population cities over 25,000....	53,216
Population outside larger cities..	348,186	Population outside larger cities..	207,727

Grouping Towns into Local Health Districts.

While the state is too large to make an ideal unit for health administration, the smaller incorporated cities are altogether too small.

Every incorporated town or city is required to maintain a board of health and a health officer. Most of the cities and some of the counties have populations altogether too small to pay for the services of a trained health officer, to say nothing of the support of a milk inspection service or the numerous other important functions of a health department. As a result health protection is almost nil in many places.

TENTATIVE SCHEME FOR PROPOSED STATE HEALTH DISTRICTS



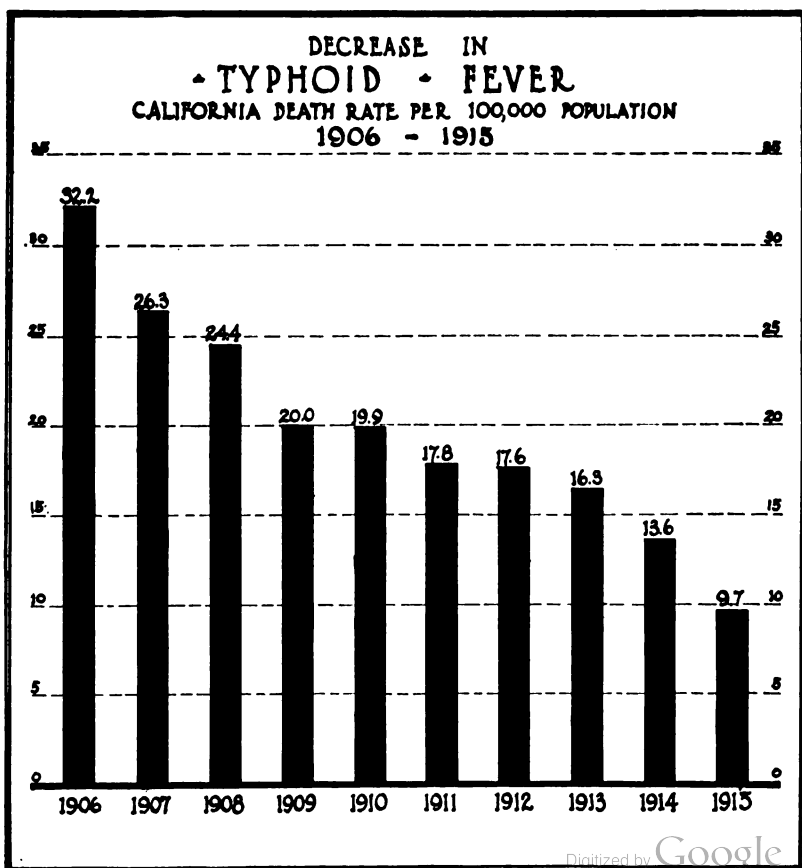
Obviously the remedy lies in grouping the smaller communities into health districts large enough to maintain a health department. The State Board of Health will therefore recommend legislation which would enable small cities, together with the intervening and surrounding territory, to form local health districts for the purpose of maintaining health departments under the supervision of full-time health officers. Such combinations should permit the maintaining of modern health departments where efficient public health protection is now almost absent. Local health districts would prove invaluable for the

enforcement of the new state milk law and the carrying on of meat and market inspection as well as the control of communicable diseases.

Typhoid Fever Becoming Rare.

The biennial period has seen a most remarkable reduction in the amount of typhoid fever in California. In the year 1915 the typhoid fever death rate was 9.7 per 100,000 population. It had fallen 29 per cent since the year before and 70 per cent in the nine previous years. In 1906, when complete statistics of deaths were first collected by the state, the typhoid fever death rate was 32.2 per 100,000 population. If that rate had continued until the end of the year 1915, there would have been 3,193 more deaths from typhoid fever in California than actually occurred. The saving of this number of lives through improved sanitation means that 30,000 cases must have been prevented. The mortality records for the first half of 1916 promise a still further decrease in the typhoid death rate for this year.

The table below gives the typhoid fever death record for the past nine years and shows the recent rapid fall in the prevalence of the disease.



The fall in the typhoid fever death rate is of great significance because it is an index of the success of control measures not only against typhoid fever, but also against a number of other diseases. Many diseases, especially certain types of dysentery and diarrhea, are spread by the same insanitary conditions responsible for the spread of typhoid fever, and a fall in the number of deaths from this disease indicates a greater decrease in the number of deaths from other preventable diseases.

California has at last taken a place among the states with low typhoid fever death rates. The rate will doubtless be further reduced in the ensuing years, for it is the intention of the State Board of Health to continue its campaign with increased vigor. One of the greatest factors in the rapid reduction of typhoid fever, the protection and control of public water supplies, should produce increasing results as the Bureau of Sanitary Engineering extends its work. Moreover, a new and important factor will begin to show its effect when the new state milk law compelling the pasteurization of all milk not from tuberculin tested cows goes into effect. It will result in the pasteurization of nearly all milk supplies and will therefore almost entirely eliminate milk-borne typhoid fever.

California should have a typhoid fever death rate below 5 per 100,000 population as soon as the plans of the State Board of Health for the control of water and milk supplies, for better rural sanitation, and for the intensive investigation and control of all outbreaks have been fully carried out.

The Prevention of Mental Disease.

The prevention of mental disease has been greatly neglected. It has, until recently, been looked upon as outside the field of public health activity. In fact the responsibility for reducing the number of mental defectives has never been very definitely placed.

The state is vitally interested in the prevention of mental disease; first, because the level of efficiency and well-being of the people can thereby be raised, and, second, because the burden of the care of the insane, the feeble-minded, the epileptic, and the incorrigible criminal has properly been placed upon the state.

It has now been definitely shown that a large part of the insanity responsible for crowding our state hospitals is preventable. According to the records of the State Lunacy Commission about 14.5 per cent of the 6,938 patients admitted to state insane hospitals during the biennial period were found to be syphilitic, and 15 per cent of the cases were directly due to alcohol, not counting the large number of inebriates committed to the hospitals.

The three principal causes of insanity—heredity, syphilis, and alcohol—can all be directly controlled and at least partially eliminated as primary or secondary causes of mental disease. The influence of heredity is being somewhat controlled by the prevention of the propagation of people with pronounced inherited mental defects by segregation in institutions, or by surgical operation before release, in accordance with the state asexualization law. The reduction of the consumption of alcohol by making it less accessible, and by educating the public, is receiving attention throughout the nation. Syphilis, on the other hand, is relatively neglected, and is a disease which the State Board of Health and all local health officials should take steps to control.

Syphilis.

Under the state law, syphilis must be reported by physicians and others, although it is not required that the patient's name be forwarded if the physician will send an identifying office number. The reporting has been increasing steadily, but is still far from complete. In the laboratory of the Bureau of Communicable Diseases Wassermann tests for syphilis are made, without charge, for any citizen of the state, if proper specimens of blood are sent by the attending physician. In addition to these measures there should be state inspection and encouragement of public clinics and hospitals in which syphilis is treated, and compulsory isolation, or commitment to hospitals, of patients who are infectious and will not take treatment or avoid exposure of other persons. General laws may possibly now convey these powers to the State Board of Health, but it would be of advantage to have specific legislation on the subject. Such legislation could well be made to include measures relative to gonococcus infections.

A Psychopathic Hospital.

To give to the prevention of mental disease an impetus which will bring the largest of results, immediate provision should be made for scientific study of insanity from every angle, with emphasis on causes and prevention. Moreover, the medical students of to-day, who will be the practitioners and experts of to-morrow, should have better opportunity for studying mental disease and its causes. The state needs a psychopathic hospital which will be essentially a research institution, but also a hospital for patients whose cases may need unusual study. At such a hospital patients could be studied to ascertain whether formal commitment is needed. The teaching and research advantages of the institution should be magnified by close relationship to the medical school of the University of California, with opportunities open to properly qualified students from the other schools.

In order to be of greatest use to the state, this institution should have connected with it an out-patient department and field workers who

would investigate the conditions which are responsible for the dependency of mental defectives. Many of the insane would never need institutional care if unfortunate inheritance had not been supplemented by unfavorable environment. If the first sign of trouble had been detected, the cause removed, and a reasonable degree of helpful supervision given, some of these patients would have rounded out a normal life. Likewise, patients discharged from insane hospitals should be kept track of. If they showed signs of relapse a short voluntary sojourn in the psychopathic hospital might prevent a complete break. For these reasons, the state, through a psychopathic hospital, should have affiliations with approved clinics for mental and nervous disease throughout the state, with juvenile courts, and with all other local institutions which are striving to diminish mental disease by helping mental defectives to avoid the causes which are pushing them on to insanity or criminality.

This plan for prevention will not in any way diminish the immediate need for industrial farms for the large number of users of alcohol and morphine, and for epileptics and feeble-minded persons. They require segregation under wholesome conditions of outdoor work.

The Prevention of Tuberculosis.

California has at last made a definite beginning on a broad plan for preventing tuberculosis. The long delay was doubtless due in large part to the appalling magnitude of the problem. In addition to caring for the tuberculous who contracted the disease within her borders, California finds it necessary to receive and look after a vast army of sufferers from other states. As a result of the annual migration into California of persons sick with tuberculosis, most of them in advanced stages, the tuberculosis death rate in our state has become one of the highest in the United States. In the year 1915 there were 5,551 deaths from tuberculosis in California. The tuberculosis death rate for that year was 194.5 per 100,000 population, a rate one-third higher than the average (145.8) for the entire United States registration area, and about twice as high as the rate in Michigan.

The legislature of 1911 made possible an investigation of the tuberculosis problem by the State Board of Health. A commission appointed by the board rendered a report in 1913 and outlined a comprehensive plan for the eradication of this disease. The first step in carrying out the plan is being accomplished by the Bureau of Tuberculosis provided for by the legislature of 1915. The director of the bureau is inspecting tuberculosis dispensaries and hospitals and encouraging the establishment of new institutions. A number of tuberculosis dispensaries have been established and many tuberculosis nurses have been employed by cities or counties as a result of the activities of the bureau. In addition

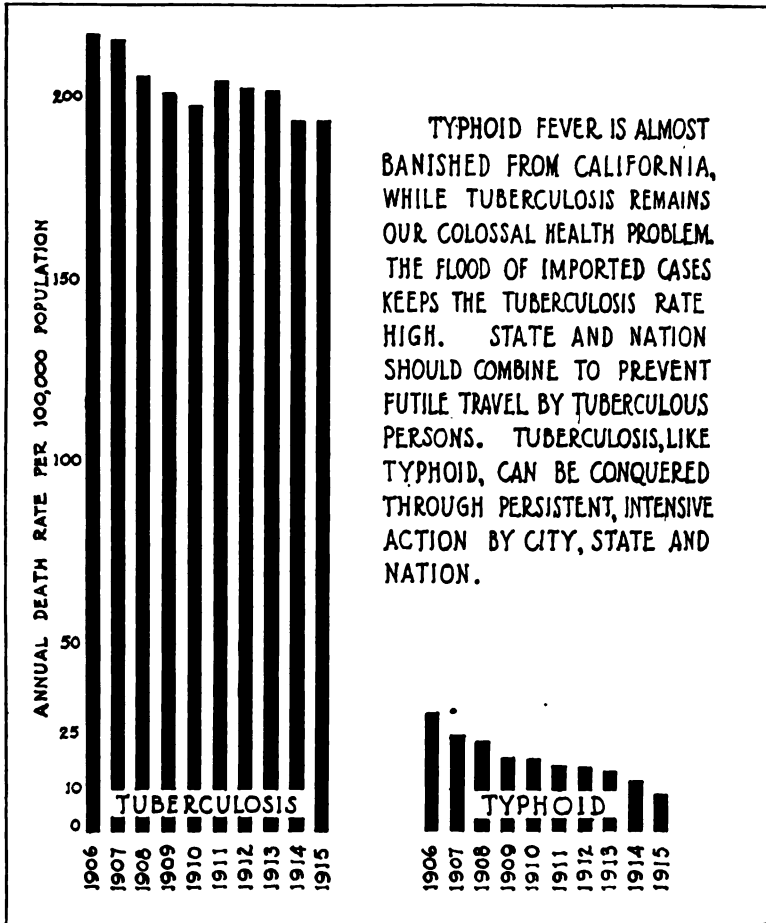
a great deal of educational literature has been distributed, some of it printed in several languages.

The most important work of the bureau has been the administration of the tuberculosis subsidy provided for by the last legislature. The sum of three dollars per week is being paid by the state toward the care of each patient in county tuberculosis hospitals which come up to standards of construction, equipment, diet and care prescribed by the State Board of Health. As a result of the subsidy the accommodations for the care of the tuberculous have been increased and greatly improved in many of the counties. It is safe to say that the additional money spent by counties in tuberculosis control work and hospital care on account of the state subsidy is more than the amount of the subsidy.

In this way one of the important steps in the plan for the control of tuberculosis is being taken. Through state supervision and assistance proper care for the more advanced tuberculous patients is being provided in county after county. It is best that this very large class of patients, many of them bedridden, should be cared for near their homes where they can be visited by friends and relatives. It is highly important that they should not be compelled to remain in lodging houses and homes where they would infect other persons. Ultimately more provision should be made for the care of incipient cases. Early cases can usually be cured or greatly improved and enabled to resume the support of themselves and their families.

In order to continue to develop the system of county hospitals for the tuberculous an increase in the appropriation for the subsidy will be necessary. The amount recommended is small in contrast to the large numbers of patients who are benefited and so cared for that they will not infect others.

An idea of the great size of the tuberculosis problem in California is gained by a comparison in the following diagram between the deaths from this disease and those from another important disease, typhoid fever.



In the hope of relieving the state of some of the burden unfairly imposed upon it by the migration of the tuberculous from other states, the State Board of Health has given support to the Kent tuberculosis bill. This measure was introduced in the present United States Congress by Representative Kent of California. It was endorsed by joint resolution of the last legislature in the special session.

The bill provides for the control of the interstate migration of tuberculous persons by the United States Public Health Service. Indigent tuberculous persons who are not legal residents of the state in which they are found would be returned by the government to the state from which they came, or else supported in part by the government in such hospitals as come up to standards set by the United States Public Health Service. This bill, if passed, will lighten the tuberculosis burden in California so that it can be properly carried by the state and the counties without unreasonable hardship. The bill has been reported out of

committees in both houses of congress with recommendation that it pass, and it is hoped that it will become law during the short session.

Plague Eradication.

In another part of this report will be found an account of the operations for the eradication of plague. Since 1908 the State Board of Health has cooperated with the United States Public Health Service in the work of squirrel eradication in the infected areas, but in the latter part of the biennial period the available state funds for this purpose have decreased, and the total funds have not been adequate. The disease at the end of the biennial period is limited to ground squirrels and persists in eight counties. At the present rate it will take many years to eradicate plague completely and remove the danger of the sudden appearance of an epidemic among the people. As a matter of economy, as well as protection of the public health, a liberal appropriation should be made for carrying on the work. With the funds now available little more is accomplished than to hold the disease in check and to keep close account of its location. I strongly recommend that the appropriation for this work be large enough to bring about a continuous and rapid shrinking of the area of infection with its ultimate complete disappearance. With an adequate appropriation the State Board of Health would be in a position to accept the eradication of plague among ground squirrels as strictly a state problem, and to take over the work in its entirety by July 1, 1918.

Hookworm in the Mines.

Early in the year 1916 a cooperative investigation of hookworm in the deep gold mines of California was begun by the State Industrial Accident Commission, the United States Bureau of Mines, and the State Board of Health. Laboratory and medical examinations were made by the Bureau of Communicable Diseases of the State Board of Health. A mining engineer was detailed for the work by the State Industrial Accident Commission and the United States Bureau of Mines. This investigation showed a high percentage of infected men in certain mines. A plan was put into operation by which the mine operators and the miners arranged for the treatment of the men found to be infected and the State Board of Health made laboratory examinations to determine the success of the treatment. Certificates, good for a period of six months, are being issued to men found to be free from the disease at the time of the first examination, or after treatment. By requiring their employees to hold these certificates, and by improving sanitary conditions in the mines at the same time, mine operators have it in their power to control the disease.

The investigation and the control measures will be continued by the State Board of Health.

Malaria and Mosquitoes.

Under the Mosquito Abatement Districts Act several communities are organizing for the control of mosquitoes. By working under this act, regions in which malaria is prevalent have it in their power to get rid of the disease and at the same time to lose an unsavory reputation for unhealthfulness. The State Board of Health is helping in the organization of the districts by furnishing the services of experts to make the preliminary survey and to assist in publicity work when the petitions are being circulated.

Before the end of the biennial period a statewide survey of malaria and mosquitoes had been started by the consulting parasitologist and his assistants. The results will be of great value to the board in its work of eradicating malaria.

Sanitary Engineering.

The Bureau of Sanitary Engineering, established by the last legislature, has already produced remarkable results in the improvement of drinking water supplies and the regulation of sewage disposal. Definite reductions in the sickness and deaths due to sewage polluted water supplies have already resulted. Largely through the efforts of this bureau many dangerous public water supplies have been chlorinated. At the end of the biennial period about a million people were receiving water which had been made safe by treatment with chlorine.

The laws under which the bureau works should be amended so that there can be no question as to the power and duty of the bureau to regulate water supplies in regard to turbidity, tastes, hardness, and other undesirable characteristics. At present the laws regarding public water supplies place the emphasis on the possible danger to health and this could be narrowly interpreted to refer only to infectious diseases. The law should forbid supplying to the public water which is not fit to drink, no matter whether the undesirable constituents are silt, mineral salts, algæ, or dangerous bacteria.

Shellfish.

Discharging sewage into the salt waters of California is not without danger. During the biennial period several small outbreaks of typhoid fever occurred among persons who ate uncooked clams from sewage polluted mud flats around San Francisco Bay. There will be danger also from the pollution of oysters unless greater supervision is exercised over the oyster industry. It is recommended that the Bureau of Sanitary Engineering be empowered and instructed to study the pollution of clam and oyster beds and to forbid practices which endanger the public health.

Swimming Pools.

Public swimming pools are becoming more numerous. If the care of the water in the pools and the proper sterilization of bathing suits and towels are neglected, bathing establishments become a positive danger to health. Public swimming pools throughout the state should be permitted only when they meet minimum state requirements and hold a permit from the Bureau of Sanitary Engineering.

Sanitary Inspections.

The work of inspecting summer resorts is being continued and numerous improvements in sewage disposal and water supplies have been brought about. In this way the amount of disease contracted by vacationists is being diminished. The one sanitary inspector of the board is available for this important work only a few months in the year and he can visit only a small part of the resorts. Additional inspectors are needed to enforce proper sanitation in rural districts, health resorts, and small towns, and also to do field work in the control of unusual epidemics.

Bureau of Communicable Diseases.

The State Board of Health depends on the Bureau of Communicable Diseases for the expert services necessary for preventing and suppressing epidemics. As soon as a communicable disease becomes unduly prevalent in some part of the state the epidemiologists of the bureau are called upon to make the field examinations. Often they take entire charge of control measures, much to the relief of a frightened community.

Outside a few large cities, few communities have the services of an expert sanitarian or a public health laboratory, except as these are furnished by the Bureau of Communicable Diseases. When an unusual outbreak of disease occurs, or when the source of a few cases is a mystery, the local health officer turns at once to the State Board of Health. The expert epidemiologists of the bureau seldom encounter a situation which can not be studied out and definitely explained. The explanation usually gives the method of control. In this highly specialized work the epidemiologists are aided by the laboratory of the bureau.

In order to give prompt laboratory services the bureau maintains branch laboratories at Sacramento and Fresno and a division laboratory at Los Angeles.

The bureau makes examinations for various diseases if specimens are submitted by health officers or physicians. Included in the work is the examination of blood specimens for syphilis by the Wassermann test. No charge is made for any examination, and the services are available to all citizens. The presence of a dangerous communicable disease is often first revealed to the authorities by the report on a specimen received at the laboratory.

An Epidemic of Rabies in Coyotes.

Rabies, known also as hydrophobia, has been endemic over a large part of California ever since the state was swept from south to north by the epidemic which began in 1909. As a result occasional small outbreaks in dogs are being reported from widely separated points. A few persons have died from the disease contracted from the bites of rabid animals, and many people who have been bitten have received the preventive Pasteur treatment from the Bureau of Communicable Diseases of the State Board of Health.

Of great interest was the sudden invasion in 1915 of Modoc and Lassen counties by rabies brought in from Oregon by coyotes. The epidemic was so sudden and so dangerous to people and cattle that the State Board of Health established the state rabies quarantine in both counties and instituted an intensive campaign against coyotes and loose dogs. Thousands of these animals were killed and they soon became very scarce. As a result rabies diminished rapidly and disappeared from Lassen County and most of Modoc County. The latter county is peculiarly liable to reintroduction of the disease from adjacent portions of Oregon and Nevada.

In the control work invaluable cooperation was received from the United States Biological Survey, the United States Forest Service, and the United States Public Health Service.

Drinking Cups and Common Towels.

The common drinking cup and the public roller towel should be abolished by statute. They are becoming rare but may occasionally be seen in public places. The law should also compel the sterilization of dishes and drinking utensils in restaurants, soda fountains, and other places where food or drinks are publicly sold or dispensed. Provision should also be made for the proper storage and protection of drinking water supplies on ships, so that the open water cask will be supplanted by a proper container.

Adulteration of Foods and Drugs.

During the biennial period the Bureau of Foods and Drugs has greatly increased its work with only a slight increase in the working force. In the second year of the period, 5,896 samples were analyzed and 491 cases of violations of the foods and drugs act were referred to district attorneys for prosecution. Over a million pounds of decomposed foodstuffs of various kinds were destroyed.

In these ways the bureau is protecting the food and drug supplies of the people of California and preventing fraud on the part of unscrupulous manufacturers and merchants.

The Consulting Nutrition Expert.

The Consulting Nutrition Expert, appointed in accordance with the provisions made by the last legislature, has exerted valuable supervision over diet and the preparation of foods at state institutions, including hospitals and prisons. His services are now being called for by county institutions, and he is making inspections and assisting officials to select adequate but economical diets for the inmates. Of particular value is his influence in preventing excessive curtailment of diet in county institutions for the sake of economy while the present high price of foodstuffs lasts. He has assisted state institutions by his study of the causes of the wasting of food by inmates. Careful attention to balance in the diet and appetizing methods of serving have reduced the amount of scraps returned from the tables.

The Sanitary Code.

Regulations for the prevention of a number of diseases and for the enforcement of several state laws have been prepared, adopted, and published with explanatory notes in a series of circulars. When the series is completed the regulations will be edited and amended and brought together as a sanitary code.

Need for More Legal Service.

The work required of the attorney of the State Board of Health has grown until it is impossible for one man to do it under the present system of nonresident and part-time service. Originally little more was required of the attorney than the filing of an occasional opinion, but the present activities of the board are such that the continuous service of an attorney is an urgent necessity. The newly established Bureau of Sanitary Engineering, in its important work of regulating public water supplies and sewage disposal systems, is confronted by the opposition of powerful corporations. Emergencies involving important legal points arise frequently in the executive office and necessitate prompt legal advice. Moreover, public health law is a specialty and involves an understanding of the fundamental principles of public health. There should, therefore, be closer contact between the attorney and the remainder of the staff of the board so that there can be an increase in efficiency through mutual education.

For these reasons, I recommend that the law providing an attorney for the State Board of Health be amended by the addition of the requirements that he devote his entire time to the service of the board and that he hold his office at the executive office of the board; and that he be appointed by the board under civil service. Without such a change it will be necessary to go to the considerable expense of employing special counsel during the coming biennial period.

The Registration of Nurses.

The Bureau of Registration of Nurses has succeeded in raising the standards of accredited training schools for nurses and has specified the minimum course of instruction. Moreover, the State Board of Health has ruled that, after September 1, 1918, accredited schools will not be allowed to admit pupils who are not high school graduates. Examinations for certification as registered nurse are held twice a year simultaneously in San Francisco, Sacramento and Los Angeles.

Cooperation with Other State Departments.

The services of the State Board of Health have been required by other state departments more than ever before. The Bureau of Communicable Diseases is assisting in improving sanitary conditions in state institutions and investigating and controlling such communicable diseases as may appear. The Bureau of Sanitary Engineering is constantly being called upon for expert engineering and laboratory service in connection with the water supplies or sewage disposal plants of state hospitals or prisons; and the Bureau of Foods and Drugs is making large numbers of examinations of samples of materials bought by the state. The samples examined at the foods and drugs laboratory for state institutions within the biennial period numbered 1,986, and included a wide range of foods, drugs, textiles, and other materials. In this way the State Board of Control is able to find out whether goods meet the standard set in the specifications.

WILBUR A. SAWYER,
Secretary.

MEMBERS OF THE CALIFORNIA STATE BOARD OF HEALTH APPOINTED BETWEEN THE YEARS 1870 AND 1916.
 By L. B. Mallory, Assistant to the Secretary.

Name	Date appointed	Whence appointed	By whom	Expiration of service	Cause of separation
Thos. M. Logan.....	April 15, 1870	Sacramento	Governor Haight	Mar. 31, 1876	Death.
J. F. Montgomery.....	April 15, 1870	Sacramento	Governor Haight	Jan. 16, 1880	Term expired.
Henry Gibbons.....	April 15, 1870	San Francisco	Governor Haight	Jan. 2, 1885	Death.
L. C. Lane.....	April 15, 1870	San Francisco	Governor Haight	Mar. 15, 1875	Term expired.
F. Walton Todd.....	April 15, 1870	Stockton	Governor Haight	Jan. 6, 1880	Term expired.
C. E. Stone.....	April 15, 1870	Marysville	Governor Haight	April 19, 1873	Resigned.
Luke Robinson.....	April 15, 1870	Santa Clara	Governor Haight	Jan. 16, 1880	Term expired.
A. B. Stout.....	April 19, 1873	San Francisco	Governor Booth	Jan. 16, 1880	Term expired.
James Murphy.....	Mar. 15, 1875	San Francisco	Governor Pacheco	Jan. 16, 1880	Term expired.
J. S. Cameron.....	Mar. 31, 1876	Red Bluff	Governor Irwin	Mar. 17, 1880	Term expired.
F. W. Hatch, Sr.....	Mar. 17, 1876	Sacramento	Governor Irwin	Nov. 19, 1884	Death.
W. R. Chunes.....	Jan. 16, 1880	Sacramento	Governor Perkins	Feb. 13, 1888	Resigned.
J. P. Widney.....	Jan. 16, 1880	Los Angeles	Governor Perkins	Jan. 16, 1884	Term expired.
C. C. Mason.....	Jan. 16, 1880	Chico	Governor Perkins	Jan. 16, 1884	Term expired.
J. W. Breyfogle.....	Jan. 16, 1880	San Jose	Governor Perkins	Jan. 16, 1884	Term expired.
M. M. Grancee.....	Mar. 17, 1880	Visalia	Governor Perkins	Dec. 6, 1880	Death.
Chester Rowell.....	Dec. 6, 1880	Fresno	Governor Perkins	Jan. 2, 1885	Resigned.
Henry S. Orme.....	Jan. 16, 1884	Los Angeles	Governor Stoneman	Mar. 27, 1891	Term expired.
Gerrard G. Tyrrell.....	Nov. 19, 1884	Sacramento	Governor Stoneman	Nov. 9, 1888	Term expired.
R. Beverly Cole.....	Jan. 2, 1885	San Francisco	Governor Stoneman	April 17, 1891	Resigned.
James Simpson.....	Jan. 2, 1885	San Francisco	Governor Stoneman	May 27, 1891	Term expired.
J. M. Brice land.....	Jan. 16, 1884	Shasta	Governor Stoneman	Mar. 27, 1891	Term expired.
H. C. Crowder.....	Jan. 16, 1884	Colusa	Governor Stoneman	Jan. 5, 1888	Term expired.
C. A. Ruggles.....	Jan. 5, 1888	Stockton	Governor Waterman	Mar. 6, 1908	Term expired.
J. R. Laine.....	Nov. 9, 1888	Sacramento	Governor Waterman	Mar. 29, 1897	Term expired.
W. G. Cochran.....	Mar. 27, 1891	Los Angeles	Governor Waterman	Feb. 16, 1898	Resigned.
P. C. Remondino.....	Mar. 27, 1891	San Diego	Governor Markham	Mar. 29, 1897	Term expired.
C. W. Nutting.....	Mar. 27, 1891	Fina Mills	Governor Markham	May 20, 1901	Term expired.
Julius Rosenstein.....	April 17, 1891	San Francisco	Governor Markham	Feb. 13, 1893	Resigned.
W. F. Ward.....	Feb. 13, 1893	Sacramento	Governor Markham	Mar. 29, 1897	Term expired.
Winslow Anderson.....	Mar. 16, 1893	San Francisco	Governor Markham	Mar. 16, 1908	Term expired.
J. H. Davison.....	Mar. 16, 1893	Los Angeles	Governor Markham	Mar. 29, 1897	Term expired.
John Morae.....	Mar. 16, 1893	San Francisco	Governor Budd	Sept. 14, 1896	Death.

R. W. Hill	Mar. 29, 1897	Los Angeles	Governor Budd	Feb. 5, 1903	Withdrawn.
W. P. Mathews	Mar. 29, 1897	Sacramento	Governor Budd	Feb. 5, 1903	Withdrawn.
D. D. Crowley	Mar. 29, 1897	Oakland	Governor Budd	Mar. 27, 1901	Term expired.
A. M. Henderson	Mar. 29, 1897	Sacramento	Governor Budd	June 23, 1900	Failed to qualify.
Louis Bazet	Sept. 14, 1898	San Francisco	Governor Budd	June 8, 1900	Resigned.
Winslow Anderson	June 19, 1900	San Francisco	Governor Gage	Mar. 16, 1903	Resigned.
W. H. Hanna	June 23, 1900	Sacramento	Governor Gage	Feb. 5, 1903	Withdrawn.
W. B. Coffey	May 29, 1901	San Francisco	Governor Gage	Feb. 5, 1903	Withdrawn.
O. L. Gregory	May 29, 1901	Yreka	Governor Gage	Feb. 5, 1903	Withdrawn.
Frank G. Fay	May 29, 1901	Sacramento	Governor Gage	Feb. 5, 1903	Withdrawn.
Martin Regensburg	Mar. 16, 1903	San Francisco	Governor Pardee	Jan. 18, 1915	Term expired.
N. K. Foster	Mar. 6, 1903	Oakland	Governor Pardee	June 26, 1909	Resigned.
F. K. Alsworth	May 26, 1903	San Francisco	Governor Pardee	Jan. 18, 1915	Resigned.
W. A. Briggs	Mar. 16, 1903	Sacramento	Governor Pardee	Feb. 6, 1915	Resigned.
A. C. Hart	Mar. 16, 1903	Sacramento	Governor Pardee	June 26, 1909	Term expired.
Matthew Gardner	April 3, 1903	San Francisco	Governor Pardee	June 26, 1909	Term expired.
O. Stansbury	Mar. 16, 1903	Chico	Governor Pardee	Jan. 18, 1915	Death.
W. LeMoine Willis	Mar. 16, 1903	Chico	Governor Pardee	Jan. 18, 1915	Term expired.
James H. Parkinson	Mar. 16, 1903	Los Angeles	Governor Pardee	Jan. 18, 1915	In office.
Wm. F. Snow	May 26, 1909	Sacramento	Governor Gillette	Sept. 2, 1915	Term expired.
Donald H. Currie	June 26, 1909	Stanford University	Governor Gillette	Dec. 1, 1913	Resigned.
Edw. F. Glaser	Dec. 30, 1913	U. S. P. H. S., San Francisco	Governor Johnson	Aug. 31, 1916	Resigned.
Adelaide Brown	Dec. 30, 1913	San Francisco	Governor Johnson	Aug. 31, 1916	In office.
Geo. E. Ebricht	Jan. 18, 1915	San Francisco	Governor Johnson	-----	In office.
F. F. Gundrum	Jan. 18, 1915	San Francisco	Governor Johnson	-----	In office.
R. A. Peers	Jan. 18, 1915	Sacramento	Governor Johnson	-----	In office.
W. A. Sawyer	Sept. 2, 1915	Colfax	Governor Johnson	-----	In office.
	Sept. 2, 1915	Berkeley	Governor Johnson	-----	In office.

REPORT OF THE BUREAU OF ADMINISTRATION.**WILBUR A. SAWYER, M.D., Director.****REPORT OF OPERATIONS FOR THE ERADICATION OF
BUBONIC PLAGUE.**

Bubonic plague in California is at present confined almost exclusively to ground squirrels in the rural parts of the state. From time to time other rodents or human beings become infected from the squirrel. There is, moreover, constant danger that the disease will be transferred from the infected squirrels to the rats of some of our cities. When the rats of a city become infected an epidemic among human beings is probable with serious loss of life and injury to commerce.

The disease is transmitted from rodent to rodent or from rodent to man by the rat flea, which ingests plague bacilli with the blood of the sick animal and later inoculates another animal, or man.

In September, 1907, there was an epidemic of plague in San Francisco and the mayor of that city and the state of California asked the United States Government to assist in eradicating the disease. Since that time the United States Public Health Service and the California State Board of Health, with such local assistance as was available, have carried on an intensive campaign with the object of eradicating plague from the state. The work has been completely successful as far as the eradication of plague in rats in cities is concerned, but the disease is still present among ground squirrels throughout a wide area.

The Public Health Service withdrew from its plague eradication work in San Francisco on June 30, 1916, leaving such precautionary work as was necessary in the hands of the city authorities. No case of rodent plague had been found in the city since October 23, 1908, in spite of extensive trapping and examination of rats.

Plague in ground squirrels, on the other hand, is still widespread. While it has been controlled in certain localities, many foci remain and it will take years to complete the eradication of the disease through squirrel destruction. The United States Public Health Service and the State Board of Health are cooperating in this work. The former has immediate charge of the operations in the field and in the laboratory.

The following table shows in condensed form the experience of California with bubonic plague. It is reprinted from the United States Public Health Reports for October 13, 1916, Vol. 31, page 2868:

TABLE 1.

Places in California	Date of last case of human plague	Date of last case of rat plague	Date of late case of squirrel plague	Total number rodents found infected since May, 1907
Cities.				
San Francisco	Jan. 30, 1908	Oct. 23, 1908		338 rats
Oakland	Aug. 9, 1911	Dec. 1, 1908		136 rats
Berkeley	Aug. 28, 1907			None
Los Angeles	Aug. 11, 1908		Aug. 21, 1908	1 squirrel
Counties.				
Alameda (exclusive of Oakland and Berkeley)	Sept. 24, 1909	Oct. 17, 1909	June 23, 1916	233 squirrels, 1 wood rat
Contra Costa	July 13, 1915		June 28, 1916	1,629 squirrels
Fresno			Oct. 27, 1911	1 squirrel
Merced			May 12, 1916	7 squirrels
Monterey			May 27, 1916	38 squirrels
San Benito	June 4, 1913		July 1, 1916	72 squirrels
San Joaquin	Sept. 18, 1911		Aug. 26, 1911	18 squirrels
Santa Clara	Aug. 31, 1910		June 21, 1916	32 squirrels
San Luis Obispo			Jan. 29, 1910	1 squirrel
Santa Cruz			May 30, 1916	5 squirrels
Stanislaus			June 2, 1911	18 squirrels
San Mateo			June 21, 1916	1 squirrel

On August 20, 1913, the State Board of Health passed the following self-explanatory resolution:

"Whereas, There has been found within the territory comprised in the counties of Contra Costa, Alameda, Santa Clara, Santa Cruz, Monterey, San Benito, Merced, Stanislaus and San Joaquin, of the state of California, a total of one thousand eight hundred and forty-three (1,843) ground squirrels (*Citellus beecheyi*) which have been proven by laboratory investigation to have been infected with a contagious and infectious disease, to wit, bubonic plague; and

"Whereas, An act of the legislature of the state of California, approved June 7, 1913, provides: 'Whenever any land, place, building, structure, wharf, pier, dock, vessel or water craft is infected with rodents, insects or other vermin which are liable to convey or spread contagious or infectious disease from an existing focus declared by the State Board of Health, it shall be the duty of said board to at once notify the person, firm, copartnership, company or corporation, owning said land, place, building, structure, wharf, pier, dock, vessel or water craft, of the existence of said rodents, insects or other vermin, and said notice shall direct said owner to proceed immediately to exterminate and destroy said rodents, insects or other vermin, and to continue in good faith such measures as may be necessary to prevent their return. In the event that said owner fails, refuses or neglects to proceed as above provided, within ten days from date of receipt of said notice, the State Board of Health may at once proceed to exterminate and destroy said rodents, insects or other vermin, and take such measures as may be necessary to prevent their return, and the cost of the above measures shall be repaid to the State Board of Health by the board of supervisors or other governing body of the county, city and county, city or town wherein the work is done at its next meeting after the bill is presented and the appropriation provided in section 1 of this act shall be reimbursed by the amount so paid, and may again be expended in a similar manner'; therefore, be it

"Resolved, That the territory comprised within the aforesaid counties is hereby declared to be an existing focus of contagious and infectious disease; and be it further

"Resolved, That the secretary of this board be directed to notify the supervisors of the above named counties of the passage of this resolution and of the intention of the State Board of Health to proceed in accordance with the provisions of the act of the state legislature, approved June 7, 1913."

As a plague-infected ground squirrel was found in San Mateo County on June 21, 1916, the State Board of Health added that county to the list of plague foci through the following resolution, passed September 2, 1916:

Resolved, That, inasmuch as a plague-infected ground squirrel has been found in San Mateo County, that San Mateo County be declared an existing focus of plague.

In addition to the ten counties mentioned above, three other counties were invaded at one time or another, but the disease apparently did not gain a firm foothold, and was promptly eradicated. These counties are the following: San Luis Obispo, Fresno, and Los Angeles. Plague has been present in thirteen counties in all. Plague appears to have been completely eradicated from several of these, but plague-infected squirrels were found as late as during the biennial period ending June 30, 1916, in the following eight counties: Alameda, Contra Costa, Merced, Monterey, San Benito, Santa Clara, Santa Cruz and San Mateo.

The experience of the last two years shows that a large increase in the total funds available for plague eradication is necessary if the disease is to be wiped out within the next few years.

REPORT OF SENIOR SURGEON C. C. PIERCE.

The remainder of this report has been prepared for the State Board of Health by Senior Surgeon C. C. Pierce, United States Public Health Service, who is in charge of the field operations against plague carried on jointly by the United States Public Health Service and the State Board of Health.

The work has been continued with the same organization and system as in previous years, as follows: In each of the nine counties in which plague infection has been found a supervising inspector has been stationed. The counties have been divided into districts of approximately 40,000 acres and a field inspector assigned to each. The field inspectors were directed to serve written notices upon the owners of infected lands to destroy squirrels, as provided by law, agreeing upon a date when the work was to be instituted. If upon reinspection it was found that the work had not been commenced, the case was reported to the supervising inspector, who thereupon collected such data as was necessary for the officer in charge. Orders were then issued for the concentration of a sufficient force of state employees upon the land to do the work, upon the completion of which a statement of the expense incurred was submitted to the owner, and he was given opportunity to pay same forthwith if he so desired. If the bill was not paid as presented, same was forwarded to the State Board of Health for collection in the manner provided by the California legislature in an act approved June 7, 1913.

It became necessary during the year ending June 30, 1915, to proceed upon the lands of 42 persons. An idea of the cooperation obtained from individuals in the destruction of ground squirrels may be gleaned from the fact that out of a total of 18,131 inspections and reinspections made during the year in the nine infected counties, but this number had to be proceeded against in a summary manner, as provided by law.

Inspection Operations.

During the year ending June 30, 1915, the first year of the biennial period, operations as outlined above were carried on in the following counties: Alameda, Contra Costa, San Joaquin, Stanislaus, Merced, San Benito, Santa Clara, Santa Cruz, and Monterey.

In addition to the above nine infected counties, work was carried on for part of the year in San Mateo County. The work in this county was confined to the land adjacent to the borders of Santa Clara and Santa Cruz counties, the object of this being to prevent the migration of San Mateo County squirrels over the border, with consequent reinfestation of lands in the two contiguous counties that has been cleared of squirrels, and, to a certain extent, to protect San Mateo County from the incursions of any possibly infected squirrels from the bordering previously infected counties.

Including the work done in San Mateo County, a total of 18,659 inspections and reinspections, over an area of 8,231,556 acres have been made during the year, and a total of 1,672,869 acres were treated with poisoned grain or other squirrel-destructive agents, as a result of the inspections made and the notices served.

Hunting Operations.

At the close of the fiscal year ended June 30, 1914, there was a total of 150,151 acres of known infected lands. During the fiscal year ending June 30, 1915, infected squirrels were found on various ranches, amounting to 21,356 acres of land, where infection was hitherto not known to exist.

The total area of infected land on June 30, 1915, was 171,517 acres. In addition thereto there were 98,320 acres of land which immediately surrounded or adjoined the infected land. This adjoining territory was subjected to the same intensive treatment that was given to the actually infected land. The total area of infected and adjoining territory was, therefore, 269,837 acres at the middle of the biennial period.

April 1 to July 1 is commonly known as the hunting season in squirrel-eradication work, for it is during these months that the new litters of squirrels commence to come above ground to play and feed. These young squirrels are apparently more susceptible to plague than the older ones, and in them the infection is more likely to be acute. Fleas likewise begin to increase at this time of the year. In counties where the infected and adjoining territory is large, hunting is continued into July, and later if necessary, to insure that all such territory is thoroughly shot over. In certain of the counties a few men have been kept hunting throughout the year.

The following table gives the data of hunting operations during the biennial period ending June 30, 1916:

TABLE 2.

	Year 1914-15	Year 1915-16	Total for biennial period
Ranches on which plague-infected squirrels have been found.....	22	69	-----
Ranches hunted over	3,924	5,863	-----
Squirrels shot	29,032	63,913	92,945
Squirrels found dead	180	336	525
Total squirrels shot and found dead.....	29,221	64,249	93,470
Squirrels examined	29,057	63,598	92,655
Squirrels found infected with plague.....	89	138	227

The finding of 138 infected squirrels during the year ending June 30, 1916, and 83 during the last three months of the year, varies from the results of the four previous years during which there was a constant decrease in the number of squirrels found and in the per cent infected with plague.

The following table gives a summary of the hunting operations for the period of intensive hunting—April 1 to June 30—for the years 1912 to 1916, inclusive:

TABLE 3.—Summary of Hunting Operations for the Period April 1 to June 30, 1912-1916.

	1912	1913	1914	1915	1916
Ranches hunted over.....	723	990	1,464	1,902	8,787
Number of squirrels shot.....	19,335	16,186	18,162	15,594	44,751
Hunters engaged, average.....	9	17	21	28	46
Average days each man hunted.....	64.4	49.4	57.2	59.5	51
Squirrels per hunter per day.....	33.3	19.2	10.5	7.6	12
Squirrels shot per ranch.....	26.7	16.3	8.5	8.1	11.8
Infected squirrels shot during period.....	506	283	44	10	83
Per cent of squirrels infected.....	2.61	1.74	.34	.05	.18

The 39 squirrels mentioned in Table 2 as being found during the year 1914-1915, were from the ranches shown in the following table:

TABLE 4.

County and ranch	Infected squirrels.	County and ranch	Infected squirrels.
Alameda County—		Contra Costa County—Continued.	
Sullivan	2	Withers	8
Fredericks	6	Baralda	1
Contra Costa County—		Bruno	2
Brown	2	Walker	1
Moraga grant	1	Thornton	1
Moraga Land Co.	2	Burgess	1
Brookwood Acres	1	San Benito County—	
Lawrence	1	Watson	1
Slater	1	Palcines	1
Brown	1	Sally	8
Hornsacker & Bailey.....	1	Watson	2
Hornsacker	1	McGrury	1
Silva	2		
Johnson	1	Total	80

The 138 infected squirrels mentioned in the following table as being found during the year 1915-1916, were found as follows:

TABLE 5.

County and ranch	Infected squirrels.	Date last squirrel found	County and ranch	Infected squirrels.	Date last squirrel found
Alameda County—			Santa Clara Co.—Con't		
People's Water Company	1	July 12, 1915	A. Bassey ranch	1	May 31, 1916
Oscar Meyer ranch	1	May 22, 1916	J. Bodeau ranch	1	June 21, 1916
M. J. Crocker estate	2	June 21, 1916			
Thomas Egan ranch	1	May 29, 1916	Total	7	
J. A. Mulqueeney ranch	1	June 7, 1916	San Mateo County—		
H. C. Peterson ranch	1	June 23, 1916	H. Selby ranch	1	June 21, 1916
Total	7		Santa Cruz—		
Contra Costa County—			Edward White ranch	1	April 23, 1916
People's Water Company	10	June 29, 1916	G. F. Sillman ranch	1	May 30, 1916
Alexander ranch	2	July 31, 1915	Total	2	
Silva ranch	1	July 31, 1915	Monterey County—		
Domingo ranch	4	Aug. 12, 1915	M. Johnson ranch	11	April 13, 1916
J. Lynn ranch	2	Sept. 13, 1915	Raymond ranch	3	Mar. 2, 1916
Mulholland ranch	1	Aug. 17, 1915	O. Herbert ranch	5	April 1, 1916
M. Duarata ranch	1	Aug. 17, 1915	Otto Olson ranch	4	April 12, 1916
Root ranch	1	Aug. 16, 1915	Wiley Bros. ranch	1	Mar. 22, 1916
J. M. Pereira ranch	1	Aug. 23, 1915	S. Dedina ranch	1	April 3, 1916
J. Christen ranch	1	Aug. 30, 1915	Peach Tree ranch	1	April 18, 1916
T. Silva ranch	2	April 20, 1916	J. Girard ranch	1	April 18, 1916
C. Belshaw ranch	1	Sept. 1, 1915	San Lorenzo or Topo reh.	5	May 27, 1916
W. Noakes ranch	1	Sept. 10, 1915	Total	32	
T. E. Chadburne ranch	1	Oct. 23, 1915	San Benito County—		
Vivian ranch	2	Nov. 12, 1915	D. J. Watson ranch	3	April 20, 1916
Lascassie ranch	2	May 30, 1916	L. J. Abrams ranch	4	July 14, 1915
Griffith ranch	2	May 10, 1916	Abrams & Brandt	2	July 26, 1915
H. Kellar ranch	1	April 28, 1916	Frusetta ranch	1	Aug. 14, 1915
J. Noria ranch	1	May 1, 1916	H. Waters ranch	1	April 10, 1916
Southport and Com. Co.	3	June 27, 1916	H. Kruse ranch	2	April 26, 1916
P. Abbott ranch	1	May 16, 1916	P. Freis ranch	1	April 24, 1916
Fernandez estate	9	May 29, 1916	Lee Payne ranch	1	April 27, 1916
Mortimer ranch	1	May 28, 1916	V. B. Oldham ranch	2	May 26, 1916
Donovan ranch	1	May 20, 1916	L. M. Egan ranch	1	May 16, 1916
Stine ranch	1	May 29, 1916	Marcus ranch	1	May 17, 1916
Kofford ranch	1	June 15, 1916	H. & L. Matthews ranch	1	May 24, 1916
Crocker & Dillon estate	1	June 17, 1916	A. Cowden ranch	1	May 27, 1916
Abrams Bros.	1	June 26, 1916	G. Wapple ranch	1	June 2, 1916
J. Harding ranch	2	June 23, 1916	D. D. Sindell ranch	6	June 30, 1916
Total	58		Garcia ranch	1	June 26, 1916
Merced County—			Total	29	
Crocker-Huffman prop'ty	2	May 12, 1916			
Santa Clara County—			Grand total for year	138	
Pacheco Pass	1	Mar. 29, 1916	Total number of ranches infected	69	
J. Heinlan ranch	2	May 29, 1916			
Cochran ranch	2	May 24, 1916			

Intensive hunting operations on a large scale and over a wide area were carried out during the hunting season of the year 1916 for the purpose of a final survey before definitely and permanently discontinuing the work in those counties in which infected squirrels could not be found. If infected squirrels had not been found this year, except in Contra Costa and San Benito, in which counties infection was known to exist, it was intended to discontinue all work in the other counties, and concentrate the entire force in the two infected counties, in an attempt to finally eliminate plague infection among ground squirrels. The finding of plague infection in eight counties, however, has

had the opposite effect and during the next few years it will be necessary to continue the work in all of these infected counties, which will result in greatly increasing the funds required, for plague eradication work in California. The finding of a plague-infected squirrel in San Mateo County is of particular significance. This is the first infection to be found in this county, which immediately adjoins San Francisco to the south, on the Peninsula, making this focus a source of great danger to the city itself. Immediate steps were taken to carry out intensive eradication work in the district just south of San Francisco, to prevent the interchange of infection between squirrels and rats.

Hunting in Other Parts of the State.

In addition to the hunting operations carried on in the ten counties that have been mentioned above, six hunters were sent to Modoc and Lassen counties, in the northeastern part of the state, during January, 1916, and remained there until the end of the fiscal year. No plague-infected squirrels were found in these two counties. The United States Public Health Service employees on this duty cooperated with the California State Board of Health, the United States Biological Survey, the Forest Service and others interested, preventing the introduction of rabies from adjoining states and to limit its spread in California. Poisoning and trapping operations were carried out in these counties to destroy coyotes during the winter and rodent survey for plague-infected squirrels was made in the spring.

Hunting was also done in Mendocino, Sonoma, Lake, Kern and Madera counties, California, during June, 1916, as a result of reports from these counties that ground squirrels had been found dead and living ones observed to act strangely, becoming gentle and apparently not possessing their usual activity. No plague infection was found among squirrels in the five counties last named.

Human Cases of Plague.

From 1908 until June 30, 1916, fourteen human cases of bubonic plague have occurred in California, contracted from infected ground squirrels. One of these cases occurred during July, 1915, in the Moraga Valley, Contra Costa County, death resulting. The diagnosis was confirmed by animal inoculations. This particular case may have contracted his infection from rats or fleas, as the patient gave a history of having slept on some straw near the railroad station at Moraga, where rat evidence was found. As the case occurred in the rural districts, most probably the infection was acquired from ground squirrels. Intensive rat and squirrel eradication measures were carried out in this vicinity; no other cases have occurred during the biennial period.

Squirrel Eradication Measures.

Inspection and hunting operations are only preliminary to the real work of the State Board of Health; eradication of plague infection among ground squirrels in California. This is a very important and difficult duty of the board, tremendous in its extent. Many landowners in noninfected parts of the state desire work done to eradicate squirrels on account of the economic benefits to be derived. This, of course, is not a public health measure, and only advice is given in such cases.

To exterminate squirrels in the infected areas is practically impossible, but by intensive work during a long period of time, it is believed that plague infection may be stamped out. The work accomplished during the year ending June 30, 1916, may be summarized as follows:

TABLE 6.—Eradicative Operations.

Number of inspections.....	1,604
Number of reinspections.....	7,786
Number of acres inspected.....	480,197
Number of acres reinspected.....	2,832,972
Number of acres treated with waste balls.....	100,078
Number of acres treated with destructors.....	16,781
Number of acres treated with grain.....	713,600
Number of miles of railroad rights of way inspected and treated.....	126
Number of miles of railroad rights of way reinspected and treated.....	818

TABLE 7.—Financial Summary—Squirrel Eradicative Campaign.

	July 1, 1914 to June 30, 1915	July 1, 1915 to June 30, 1916	Total
Amount expended by U. S. Public Health Service (including salaries of officers).....	\$57,069 00	\$61,058 73	\$118,147 73
Amount expended by State Board of Health.....	43,304 00	33,150 00	76,454 00
Amount expended by counties.....	25,643 00	13,500 00	39,143 00
Estimated amount expended by individuals.....	109,587 00	80,692 00	190,279 00
Totals	\$235,623 00	\$188,400 73	\$424,023 73

Economic Benefits From Ground Squirrel Eradication.

While it is known that great economic benefits to landowners must accrue from the destruction of ground squirrels, owing to the increase in the crops harvested, it was decided to ascertain, if possible, the exact value in dollars and cents of squirrel-eradication measures. To this end a form circular letter has been sent to farmers and others, requesting them to give an estimate of the amount saved. Almost without exception they have returned the filled-out blanks promptly, together with remarks appreciative of the work.

In the Public Health Reports, Volume 29, No. 50, December 11, 1914, there appeared an article by Surgeon J. D. Long, entitled "The Economy of Ground Squirrel Destruction," the data in which were based on the returns received in the early part of the year. Since that time a large number of additional returns have been received, and the data from these, added to that already reported, show the following economic benefits that resulted from crops saved and increased value of land, nursery stock, etc.

TABLE 8.—Economic Benefits of Squirrel Destruction in Nine Counties in California Cultivated Lands.

223 persons saved 2,175 tons of hay, value.....	\$18,992 72
278 persons saved 2,800.4 tons of grain, value.....	54,539 50
86 persons saved 337.5 tons of fruit, value.....	5,603 50
17 persons saved 33,395 pounds of nuts, value.....	1,915 00
38 persons saved 294 tons of vegetables, value.....	4,031 00
Average amount expended per person in squirrel destruction	\$73 32
Average amount saved per person	187 70

Two hundred and eight persons reported that 3,100 more head of stock could be pastured on 180,859 acres of pasture land than could be pastured before squirrels were destroyed, or one additional animal to each 58.3 acres of pasture. This alone, at a fair estimated figure of \$1 per month per head, represents a saving of \$37,200. In addition to this, various other savings were reported, in shape of diminished expense for repairs to ditch and canal banks, the number of young trees saved from injury and death, and the saving of harvested crops stored in granaries, etc.

General Considerations.

The board of supervisors of most of the infected counties have rendered financial assistance and cooperation for part or all of the biennial period. They have appropriated sums ranging from \$200 to \$500 per month, payable out of county funds, to pay for transportation of the inspectors detailed to their counties and for the purchase of supplies to be used on the county roads, etc.; in addition, furnishing the supervising inspector with an office in the courthouse at the county seat.

Reports concerning the successful squirrel-destruction work in the infected counties and its economic benefits to the farmers have been carried into neighboring counties. As a result, numerous requests have been received for advice and assistance from other counties, and from ranchers in various sections of the state. The State Board of Health, of course, could not aid in an active way in the destruction of squirrels from a purely economic standpoint, unless the question of plague infection was also involved. Printed matter and advice, however, has in every instance been afforded, and expert supervision has been furnished to many landowners, who have paid all expenses in carrying out squirrel-eradication measures on their lands. Several counties—San Mateo, Santa Barbara, and others—have set on foot independent squirrel-eradication campaigns, patterned after the methods followed by the service, their object being to comply with the demands of the ranchers and rid the county of ground squirrels for the economic benefits that will accrue. This goes to show that the problem of the ground squirrel pest, formerly believed to be one to be endured like drought or frost, is now generally coming to be regarded as one possible of solution.

MORBIDITY REPORTS.

GUY P. JONES, Morbidity Statistician.

Each succeeding year more cases of communicable disease are reported in California. While systematic reporting is in its infancy, and while there is great deficiency in the reporting of some diseases, there is a general healthy growth shown for the biennial period 1914-1915. The marked improvement in the reporting of tuberculosis, malaria and the venereal diseases is significant, particularly since these are the diseases, reports of which are the most difficult to secure. The year 1916, statistics for which are not included in this report, indicates still better reporting upon the part of physicians and health officers.

In 1913 there were 15,499 cases of communicable disease reported to the State Board of Health, as required by law.

In 1914 there were 31,792 such cases reported, more than twice as many as during the preceding year, and in 1915 there were no less

than 36,952 cases reported. This substantial growth is greater than the proportionate growth of population and can be attributed largely to the increased efficiency of health departments throughout the state, as well as to the growing demand of the general public for full information regarding the presence of communicable disease in the community.

The control of typhoid fever is gaining in strength each year. While it is true that all cases of this disease are not reported, it is certain that physicians are more conscientious in the matter than they have been. It is also true that fewer cases of this disease are reported because fewer cases now occur. The efficiency of control measures is indicated to a certain extent in the fewer cases of typhoid fever reported.

Malaria cases are well reported now, as compared with previous years. There are a great many cases that are not reported and there are a great many cases that never come to the attention of any physician or health officer. The malaria and mosquito survey conducted during the summer of 1916 by Prof. W. B. Herms, consulting parasitologist of the board, has done much to stimulate reporting. The results of this survey will be shown in the next biennial report. The increase in 1915 shows an aroused interest in reporting of malaria, but the increase in 1916 will show a much greater and more abrupt increase, due largely to the state wide survey mentioned above.

During the last part of the year 1915, organized efforts have been undertaken in securing full and complete data relative to geographical location in which various cases of communicable disease have been contracted. This has led not only to the accumulation of a considerable amount of valuable material relative to intercounty migration of infected persons, but it has also led to the discovery of foci of infection in many other states outside of California. In all such cases, the health officers of the states concerned have been notified of the removal of an infected person from that state into California.

The general improvement in reporting is indicated in the following table:

Number of Cases and Deaths From Certain Diseases Reported During 1913, 1914, and 1915.

Diseases	1913		1914		1915	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Diphtheria	1,659	184	2,679	268	3,660	311
Leprosy	11		7	2	12	
Malaria	61	77	331	70	522	49
Measles	1,796	154	8,852	150	13,114	128
Meningitis (epidemic cerebrospinal)	67	49	70	40	46	22
Pollomyelitis (acute infectious)	90	33	56	26	62	19
Rabies	6	6	2	2	3	3
Rocky Mountain spotted fever	2		2		11	
Scarlet fever	1,695	85	2,831	83	2,893	53
Smallpox	800	15	677	1	336	3
Tuberculosis	2,571	5,370	5,086	5,202	6,213	5,551
Typhoid fever	1,484	435	1,805	376	1,150	276
Gonorrhea	117	9	467	10	696	6
Syphilis	32	212	379	223	612	243

REPORT OF THE STATE BOARD OF HEALTH.

GROUP I. COMMUNICABLE DISEASES.

Number of Cases and Deaths During 1914, by Months.

Diseases	January		February		March		April		May		June	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Diphtheria	202	21	153	17	131	18	182	12	174	23	186	19
Leprosy	2				1	1				1	1	
Malaria	2	2	6	4	7	3	24	5	16	5	11	8
Measles	109	1	174	3	527	6	1,011	18	1,572	19	800	21
Meningitis (epidemic cerebrospinal)	6	2	9	6	14	7	7	5	4	1	3	3
Poliomyelitis	4	2	3	2	3	3	4	1	1	2	8	1
Rabies												
Rocky Mountain spotted (or tick) fever												
Scarlet fever	238	16	280	10	221	6	276	11	199	7	152	8
Smallpox	120		113		76		139		50	1	89	
Tuberculosis	484	425	407	526	430	527	507	489	424	465	433	459
Typhoid fever	161	23	140	27	106	25	234	36	111	26	127	27

GROUP I. COMMUNICABLE DISEASES.

Number of Cases and Deaths During 1915, by Months.

Diseases	January		February		March		April		May		June	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Diphtheria	345	35	388	45	422	27	281	16	332	26	327	30
Leprosy												
Malaria	12	1	4	3	41	4	9	9	41	8	80	2
Measles	1,825	27	2,394	30	3,007	16	2,443	19	1,569	19	1,470	2
Meningitis (epidemic cerebrospinal)	9	3	6	4	7	5	6	3	3	1	3	1
Poliomyelitis (acute infectious)	6		2	1	2	3	2	3	3	1	6	2
Rabies			2	2								
Rocky Mountain spotted (or tick) fever												
Scarlet fever	455	6	328	9	270	8	167	7	153	2	130	2
Smallpox	73		79		44	2	42	1	17		24	
Tuberculosis	488	541	457	438	708	588	495	491	557	514	629	443
Typhoid fever	68	15	83	27	90	18	67	24	89	16	76	20

GROUP I. COMMUNICABLE DISEASES.
Number of Cases and Deaths During 1914, by Months—Continued.

Diseases	July		August		September		October		November		December		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Diphtheria	118	9	107	15	198	28	345	34	417	32	466	40	2,679	268
Leprosy			2		1								7	2
Malaria	38	8	70	8	58	12	40	7	84	8	25		331	70
Measles	587	21	386	8	710	4	1,085	11	820	14	962	21	8,862	150
Meningitis (epidemic cerebrospinal)	5	2												
Poliomyelitis	12	3	10	3	3	2	5	3	2	1	1	3	56	20
Rabies											2	2	2	2
Rocky Mountain spotted (or tick) fever														
Scarlet fever	140	6	95	3	132	4	336	5	334	7	448		2,831	83
Smallpox	18		41		14		19		11		34		677	1
Tuberculosis	517	413	405	342	510	360	549	393	400	400	559	493	5,685	5,292
Typhoid fever	196	45	211	37	131	35	168	24	114	45	106	23	1,805	376

GROUP I. COMMUNICABLE DISEASES.
Number of Cases and Deaths During 1915, by Months—Continued.

Diseases	July		August		September		October		November		December		Total Cases 1915	Total Deaths 1915
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Diphtheria	170	19	188	13	126	22	294	20	380	39	407	19	3,660	310
Leprosy														
Malaria	29	3	122	6	95	4	49	4	14		46	5	522	49
Measles	126	5	73	3	31	1	30	4	47	1	99	1	13,114	132
Meningitis (epidemic cerebrospinal)	1		3	1	2	3	2		2		2	1	46	22
Poliomyelitis (acute infectious)	1	1	2		12	2	4	3	12	1	10	2	62	19
Rabies	1	1			1								3	3
Rocky Mountain spotted (or tick) fever														
Scarlet fever	91	2	86	4	176	1	303	1	314	4	422	7	2,893	53
Smallpox	15		4		6		4		14		14		336	3
Tuberculosis	386	429	429	392	565	398	567	406	424	423	508	489	6,213	5,551
Typhoid fever	125	17	131	36	146	29	106	29	80	21	89	24	1,150	276

GROUP II. COMMUNICABLE DISEASES.
Number of Cases Reported During 1914, by Months.

Diseases	January	February	March	April	May	June	July	August	September	October	November	December	Total
Anthrax										1			1
Beri-beri												1	1
Chickenpox	293	320	486	514	331	234	76	62	4	257	302	356	3,235
Dysentery					3	3			3	6	2	1	18
Erysipelas	34	18	29		28	20	27		13	18	17	45	240
German measles		2	11	8		12	5	4	2	2		3	50
Hookworm											1		1
Leprosy	2		1			1			2	1			7
Mumps	91	52	118	126	70	40	2	12	68	18	23	43	672
Pellagra								4		2	4	1	11
Plague					1								1
Pneumonia	78	80	79	92	84	78	63	62	46	74	87	153	976
Tetanus	1	1			1	1	3	2	4	3	1	3	19
Trachoma	2	2			14	8	2		3	5	7	16	59
Whooping-cough	297	297	112	558	428	219	98	97	85	66	67	79	2,703

GROUP II. COMMUNICABLE DISEASES.

Number of Cases Reported During 1915, by Months.

Diseases	January	February	March	April	May	June	July	August	September	October	November	December	Totals
Anthrax			1				1	2					4
Beri-beri								1					1
Chickenpox	477	434	693	431	354	199	47	62	77	106	236	302	3,463
Dysentery				8	11	1		4	1			1	26
Erysipelas	48	38	51	24	30	19	10	22	15	15	21	33	326
German measles		2	4	2	1		8	1	6	3	1	4	33
Hookworm													
Leprosy	2	1		1		2		5	1		2		14
Mumps	115	104	123	147	164	98	22	40	26	54	124	152	1,174
Pellagra	1	1	3	1		2		1					9
Plague							1						1
Pneumonia	162	113	175	67	95	84	36	48	60	67	122	236	1,315
Tetanus			1	2	2	1	2	2	1	3	1	1	16
Trachoma	12	8	9	20	8	6	4	5	8	7	12	13	112
Whooping-cough	97	86	137	153	128	95	67	67	93	75	71	75	1,144
Trichinosis		1				2							3

Typhoid Fever.

Four important outbreaks of typhoid fever occurred during the biennial period covered by this report. These were the outbreak in Hanford, the source of which was found in a carrier who prepared part of the food used in a church supper, resulting in an outbreak of 88 cases. This occurred in the spring of 1914. Another outbreak was that in Healdsburg, Sonoma County, in August of 1914, when 81 cases resulted from the use of a polluted water supply. Reports of both of these outbreaks have been published by Dr. W. A. Sawyer in the Monthly Bulletin. While the Hanford outbreak occurred during the end of the fiscal year preceding the period covered by this report, it is included here since it was not included in the twenty-third biennial report.

An outbreak of typhoid occurred at Helm, in Fresno County, in May, 1916, resulting in 28 cases among persons attending a school picnic, the source of infection, as discovered by Dr. James S. Cumming, being to ice cream infected by a typhoid carrier who prepared this food for the picnic.

The most widespread epidemic was that in the West Side oil fields during May, June and July, 1916, the principal investigation of which was made by Dr. Frank L. Kelly, assistant epidemiologist. There were 112 cases, some of which were due to the use of milk from a dairy employing a milker who had an ambulatory case, the rest resulting from secondary infections.

While the proportion of cases reported in the larger cities of the state, San Francisco, Los Angeles, Oakland and Sacramento, is very large, the highest rates in proportion to population are found in the rural counties. The following table indicates in which counties the disease has been most prevalent during the past few years. While this table is based upon mortality, it indicates the counties in which the least work in typhoid control is done, and also shows those counties that are the most active in the control of the disease.

Counties Having Lower Typhoid Rates.

	Average rate per 100,000 popula- tion, 1909-1914	Rate per 100,000 popula- tion, 1915		Average rate per 100,000 popula- tion, 1909-1914	Rate per 100,000 popula- tion, 1915
Alameda	12.7	9.8	Placer	17.4	10.2
Alpine	54.0		Plumas	22.2	
Del Norte			Riverside	26.8	13.8
El Dorado	6.7		Sacramento	40.8	25.5
Fresno	35.3	11.5	San Benito	10.4	
Humboldt	15.5	5.8	San Bernardino	29.1	4.2
Imperial	62.5	17.2	San Diego	14.9	8.9
Inyo	11.9		San Francisco	15.2	9.0
Kern	34.0	25.5	San Joaquin	29.9	18.7
Lake	39.2	20.2	San Luis Obispo	19.8	9.6
Lassen	34.7		San Mateo	8.1	
Los Angeles	13.3	5.6	Santa Clara	11.8	8.3
Madera	8.0		Santa Cruz	12.8	3.5
Marin	10.6	3.3	Sierra	8.0	
Mariposa	16.8		Sonoma	17.2	7.5
Mendocino	15.3		Tehama	32.1	25.8
Merced	16.5	5.5	Trinity	25.3	
Modoc	32.3		Tulare	25.0	6.8
Mono			Tuolumne	48.5	10.0
Napa	25.2		Ventura	14.5	2.9
Nevada	13.4		Yolo	14.9	7.1
Orange	31.3	19.0			

Counties Having Slightly Lower Typhoid Rates.

Amador	23.8	22.0	Solano	10.9	10.2
Contra Costa	23.1	18.0	Shasta	19.4	15.2
Kings	39.0	36.2	Stanislaus	30.3	29.2
Monterey	13.1	11.3	Yuba	21.6	18.5
Santa Barbara	16.6	15.4			

Counties Having Higher Typhoid Rates.

Butte	23.2	36.7	Glenn	20.9	36.4
Calaveras	10.9	21.8	Siskiyou	14.2	15.2
Colusa	64.7	75.7	Sutter	13.1	15.3

This disease is not reported as it should be in several counties of the state. In the detailed tables for the years 1914 and 1915, it will be noted that several counties have reported deaths from typhoid fever, but that case reports were not made. In 1914, these counties were El Dorado, Glenn and Ventura. In 1915, these counties which were delinquent in reporting were Amador, Calaveras, Glenn, Kings and Riverside. It should be mentioned here that during 1916 there has been a marked improvement in this matter in all counties of the state.

No cases or deaths from typhoid fever were reported in the following counties during 1915: Alpine, Del Norte, Mono, Inyo, Sierra and Trinity. This record was also maintained by Alpine, Del Norte and Mono counties during 1914.

Typhoid Fever, 1914—Number of Cases and

County	January		February		March		April		May	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
California.										
Alameda	11	4	16	2	10	3	13	4	4	
Alpine						1			16	
Amador										
Butte			1		1					
Calaveras										
Colusa	1	1	1							
Contra Costa		1	2	1			4	1		1
Del Norte										
El Dorado										
Fresno	1		1	1			7	1		1
Glenn										
Humboldt			1	1			1			
Imperial	3		8	2		1	7			4
Inyo					9					
Kern			1				2	1	2	
Kings				1			88	1	1	
Lake							2			
Lassen			1		1		2			
Los Angeles	22	4	36	3	33	5	32	6	23	3
Madera										
Marin			1							
Mariposa				1					3	
Mendocino									1	
Merced	3		1				3			
Modoc			1							
Mono										
Monterey					2					
Napa	1									
Nevada					1				4	
Orange				1	2		4	1	2	1
Placer									1	
Plumas										
Riverside	1		2	1	3	2	6		5	1
Sacramento	81	3	27	3	7	1	8	3	8	
San Benito							1			
San Bernardino	1	1	1		2		5	4	8	
San Diego	1		3	2	1	1	4	1	2	2
San Francisco	33	3	30	6	25	6	26	8	16	6
San Joaquin		1						2	2	1
San Luis Obispo									1	
San Mateo			1		1		5	1		
Santa Barbara			1							
Santa Clara			1		2	1	6	1	2	3
Santa Cruz			1			1				
Shasta			2		2	1	2			1
Sierra										
Siakiyou		1				2			1	
Solano					3					
Sonoma										
Stanislaus	1									
Sutter										
Tehama	1	1					3		1	
Trinity										
Tulare		2			1		3		2	1
Tuolumne				1			1			
Ventura										
Yolo		1	1						1	1
Yuba										
Totals	161	23	140	27	106	25	234	36	111	21

Deaths Reported by Months, by Counties.

June		July		August		September		October		November		December		Total	
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
14	3	11	2	11		18	3	16		10	3	9	3	143	27
		3		3								2		22	3
	1		1	1	1		1		1		3			7	4
2			1											2	1
3		3		3	1	3	1	1	4	1	1	1		10	6
2		8	2			2		3		3				21	9
							1								1
	3	3	2	5	3	2	1	3		3	1	2	1	27	14
									1		1		1		2
				2		1		3						5	4
3	3	12	2	6	2	1	1		1	2	4			45	17
					1							1		9	2
3	3				1			2	1	1	1			11	7
			1		1				1					90	4
		3		1								1		7	
2			1	1										7	1
17	4	29	8	19	3	25	5	42	1	31	6	38	4	354	52
		1				2		3		1			1	7	
		1												2	
		1	1	1	1									2	2
	1	2			1					1				5	4
1	1	2						1				1		12	2
				1		1		1		1				5	
4				1				3	1					10	1
		1							1					2	1
3				1		1		3						13	
5		3		10	2	2	1	3	5	3	2	1		33	13
					1			2						4	
					2									3	
6		4	1	1	1	1				1				29	6
11		50	4	24	4	10	2	24	1	7	2	8	1	265	24
						1		1						2	1
5		9	2	4		1	1	14	1	4	1	9	2	63	12
3	1	1	1			3		1	1	1	1			20	10
18	3	35	3	13		24	5	19	2	19	10	16	5	274	57
	1	2	5	1	3			8	2	4	4			17	22
				2	1	1		1	1	1	1			6	3
				1	1									8	2
				1		1	2		1					3	3
5	1	2	2	3	1			1	1	2		3	1	27	11
				2										3	1
														6	2
		2				2		1						1	
												1		7	3
6	1					1	1	1	1			1		12	3
		2	1	31	2	8	5	5		9	2	3		106	10
1		2	1	1		2	1	1		3	1		1	11	4
										1		1		2	
5		1	1	1	1	1			1	1	1			14	4
					1	2		2						4	1
				4	1	6	1	3		4				23	5
		1												2	1
			1	1	1									1	2
5	1	1	1	3	1	5		1		1		2	2	20	7
1		1	1	1	3	2		2				1		8	4
127	27	196	45	211	37	131	35	168	24	114	45	106	26	1,806	376

Typhoid Fever, 1915—Number of Cases and

County	January		February		March		April		May	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
California.										
Alameda	5		8		21	5	13	4	13	8
Alpine										
Amador										
Butte	1	2	1		1		1			
Calaveras										
Colusa	3		2	1	3				20	
Contra Costa			1						1	
Del Norte										
El Dorado							1			
Fresno	1	1	2	1	1				1	
Glenn	1									
Humboldt									4	1
Imperial					2		4		2	
Inyo										
Kern	1					1			2	
Kings										
Lake				1					1	
Lassen										
Los Angeles	27	6	28	6	15	8	13	2	11	3
Madera	1								1	
Marin										
Mariposa									1	
Mendocino	1								1	
Merced	1						2	1		
Modoc										
Mono										
Monterey				1						
Napa										
Nevada							2			
Orange					3	1			2	2
Placer	1									
Plumas	1									
Riverside				1			2			
Sacramento	7	1	25	4	14	2	4	2		1
San Benito										
San Bernardino		2	1						1	
San Diego	2		1							
San Francisco	8	2	11	4	19	5	10	3	16	4
San Joaquin	1		1			1	2	3	4	1
San Luis Obispo			1					1	1	
San Mateo	3		2		4				1	
Santa Barbara				1			1			
Santa Clara				3	4			2	1	
Santa Cruz										
Shasta							2	1	2	1
Sierra										
Siskiyou	1								1	
Solano							5	1		
Sonoma				1			2			
Stanislaus	1	1		1				1	1	
Sutter										
Tehama				1			2	1		
Trinity										
Tulare										
Tuolumne	1						1		1	
Ventura								1		
Yolo								1		
Yuba										
Totals	68	15	83	27	90	18	67	24	89	16

Deaths Reported by Months, by Counties.

June		July		August		September		October		November		December		Total	
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
18		18		23	9	12	4	10		6	2	8	3	148	30
					1							1			2
					2		5		1	1		1		5	11
							1						1		2
4		5		12	3	8	1	1	1	4	1			57	7
1		3	2	1		1	1		1	4	1	3	1	15	6
															1
3	1	3		8	3	1		8	2	1	2	3	1	27	9
			1								1		1	1	3
		4	1		2			4				1	1	9	2
														12	3
4		16	2	1	1	1		5		5		5	1	40	5
													2		2
						1								2	1
1						8								9	
17	7	27	1	22	2	28	1	21	4	23	3	16		248	38
				3		1								6	
					1	2				2		1		5	1
1		1												3	
						1								3	
		2		1								2		8	1
		2		1		6								9	
		2				4		1		1	2	1		9	3
1														1	
		1		1										4	
2	2	5	1			1		3	1			2	1	18	8
2		1			1	5			1					9	2
						1								2	
	2								1			2		2	6
2	1	7	2	24	1	16	1	5	5	1	1	5		110	21
		2				2		1						5	
1		5		1		3			1	2				16	3
1		2		4	3	2	1	4	1	5	2	5		26	7
13	5	12	2	19	4	25	5	18	3	17	1	11	3	179	41
1	1	1		4		7	2	4	1			1	2	26	11
				1				1				1	1	5	2
1								1						12	
				2		1	1	3	1	3	2	1		11	5
		2	1	1	1	6		3		2	1	5		24	8
			1	1				1						2	1
				1					1			5		10	3
		4	1			2		2			1	1	1	11	3
							1	1	1					6	3
3		1	1	2		1		1	1	1	1	2		13	4
2		2		1	1	1	1	2	2			4	1	14	8
1							1	3						4	1
1		1			1	1		1				1		7	3
			1			2	1	1		1			1	4	3
	1											1		4	1
										1				1	1
		1		1				1				1		4	1
1				1		1	2							3	2
76	20	125	17	131	36	146	29	106	29	80	21	89	24	1,150	276

Smallpox.

The number of cases of smallpox reported grows less year by year. Occasionally, the disease in a virulent form is brought into the state, chiefly from Mexico, and some of these cases prove fatal, but the number of fatal cases has been reduced year by year in proportion to the number of cases reported. The year 1916 will probably show an increase in smallpox mortality, due to the increased importation of a virulent form of the disease from Mexico.

Since 1914, there have been no outbreaks of importance. The last widespread outbreak occurred in Mendocino County in the fall of 1914. While a group of eight or ten cases has appeared occasionally in various parts of the state since that time, there have been no outbreaks affecting large groups of persons as has been characteristic of the disease in California during previous years. No doubt, since most California communities are fairly well vaccinated, this factor has prevented outbreaks involving large numbers of persons. Nearly all persons who have smallpox in California give histories of never having been successfully vaccinated. The proportion of those who were last vaccinated more than seven years preceding the attack is exceedingly small, and very few of those having smallpox were vaccinated within seven years preceding the attack. The following tables indicate the prevalence of smallpox in California during 1914 and 1915:

Smallpox—Vaccination Histories of Cases Reported During 1914.

	Number new cases reported during month	Deaths	Number vaccinated within seven years preceding attack	Number last vac- cinated more than seven years preceding attack	Number never suc- cess- fully vaccinated	Vaccl- nation history not obtained or un- certain
January	120	.....	3	9	55	53
February	113	.....	2	9	47	55
March	76	2	.....	7	35	34
April	139	.....	8	8	91	32
May	50	1	.....	5	38	7
June	39	.....	1	1	27	10
July	18	.....	1	2	8	7
August	44	.....	.....	2	22	20
September	14	.....	1	.....	10	3
October	19	.....	.....	6	10	3
November	11	.....	.....	.....	9	2
December	34	.....	2	1	25	6
Totals	677	3	18	50	377	232

Smallpox—Vaccination Histories of Cases Reported During 1915.

	Number new cases reported during month	Deaths	Number vaccinated within seven years preceding attack	Number last vac- cinated more than seven years preceding attack	Number never success- fully vaccinated	Vacci- nation history not obtained or un- certain
January -----	73	-----	-----	1	59	13
February -----	79	-----	-----	2	72	5
March -----	44	-----	1	9	20	5
April -----	42	-----	2	4	36	-----
May -----	17	1	-----	-----	14	3
June -----	24	-----	-----	3	17	4
July -----	15	-----	6	1	4	4
August -----	4	-----	-----	-----	3	1
September -----	6	-----	1	-----	2	3
October -----	4	-----	-----	-----	3	1
November -----	14	-----	1	1	9	3
December -----	14	-----	-----	4	8	2
Totals -----	336	1	11	25	256	44

Smallpox, 1914—Number of Cases and

County	January		February		March		April		May	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
California.										
Alameda	1		6		2		1		5	
Alpine										
Amador										
Butte	2		2							
Calaveras					4					
Colusa			1		9		11			
Contra Costa										
Del Norte										
El Dorado										
Fresno	2		11		1		1			
Glenn										
Humboldt			1							
Imperial	2		3		5		3		2	
Inyo										
Kern	2		3		2		1			
Kings	5		6		1		2		1	
Lake	12		7		1					
Lassen							3			
Los Angeles	14		6		10	1	11		6	
Madera					2		2		1	
Marin	1							1		
Mariposa										
Mendocino			15							
Merced										
Modoc							12		5	
Mono										
Monterey			3							
Napa										
Nevada	2		3		4		25			
Orange	1								6	
Placer	2		1		6		3		1	
Plumas										
Riverside							1			
Sacramento	2		2						3	
San Benito										
San Bernardino	2				1				1	
San Diego	3		2		1		2			
San Francisco	12		12		13		6		2	
San Joaquin	2		4		5		2		3	
San Luis Obispo										
San Mateo			3		2		2			
Santa Barbara										
Santa Clara	25		12			1				
Santa Cruz	22		7		6		14		3	
Shasta	1									
Sierra										
Siskiyou										
Solano										
Sonoma	1						1			
Stanislaus			3				23		10	
Sutter	1									
Tehama										
Trinity										
Tulare	3				1		8			
Tuolumne										
Ventura									1	
Yolo										
Yuba										
Totals	120		113		76	2	139	1	50	

Deaths Reported by Months, by Counties.

June		July		August		September		October		November		December		Total	
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
5		2		1										23	
														4	
														4	
														21	
														15	
4		1		16		3		1						26	
				4		3		2		1		3		28	
						1								9	
														15	
														20	
														3	
3		8		18		2						1		74	1
1								1						7	
														1	1
														15	
														17	
														3	
2						1								37	
7		2				1		2						19	
								1						14	
								1						1	
								2		3				6	
		2		1										10	
4												9		17	
										4		20		32	
3		4				2								54	
1		1						3		2		1		24	
2														9	
		1		1		1								3	
				1				1						30	1
2														54	
														1	
				1										1	
8														5	
2		1						4		1				49	
														1	
				1										1	
		1						1						14	
														1	
39		18		44		14		19		11		34		677	3

REPORT OF THE STATE BOARD OF HEALTH.

Smallpox, 1915—Number of Cases and

County	January		February		March		April		May	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
California.							5		4	
Alameda										
Alpine										
Amador										
Butte										
Calaveras										
Colusa										
Contra Costa										
Del Norte										
El Dorado										
Fresno										
Glenn										
Humboldt	3									
Imperial	6		31		20		10		6	
Inyo										
Kern										
Kings										
Lake										
Lassen										
Los Angeles	3		4		7		10		2	
Madera			1		4		1			
Marin										
Mariposa									3	
Mendocino										
Merced			1							
Modoc										
Mono										
Monterey										
Napa										
Nevada										
Orange	14		9		1					
Placer										
Plumas										
Riverside			1		1					
Sacramento					2					
San Benito										
San Bernardino	16		19		9		1		1	
San Diego	29		8				10		1	
San Francisco							2			
San Joaquin	2		2				1			
San Luis Obispo										
San Mateo										
Santa Barbara										
Santa Clara			3							
Santa Cruz										
Shasta										
Sierra										
Siskiyou										
Solano							1			
Sonoma										
Stanislaus										1
Sutter										
Tehama										
Trinity										
Tulare							1			
Tuolumne										
Ventura										
Yolo										
Yuba										
Totals	73		79		44		42		17	1

Deaths Reported by Months, by Counties.

June		July		August		September		October		November		December		Total	
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
		1				1		1				2		14	
												4		4	
				2										2	
														3	
8		3								1				85	
3		1				1								5	
												1		1	
1						1				2		2		32	
														6	
3						1		2						9	
														1	
1														1	
						1								24	
														1	
														2	
1														3	
														1	
2		1						1		3		1		53	
														48	
1		1							1			1		6	
						1						1		7	
3		8								1				15	
				1								1		2	
										6				7	
															1
				1								1		2	
1														2	
24		15		4		6		4		14		14		336	1

Poliomyelitis.

Since the outbreak of 1912 in southern California there have been comparatively few cases of this disease reported in California. The prevalence of the disease at that time has no doubt rendered a considerable part of the population immune to the strain of the disease introduced into southern California at that time. The following table shows the number of cases reported by months during the past four years.

Poliomyelitis (Infantile Paralysis)—Number of Cases and Deaths in California, January 1, 1912, to December 31, 1915.

	1912		1913		1914		1915		Total	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
January	5	3	6	4	4	2	6	---	21	9
February	7	3	2	3	3	2	2	1	14	9
March	3	1	2	3	3	3	2	3	10	10
April	5	3	6	4	4	1	2	3	17	11
May	11	2	4	2	1	2	3	1	19	7
June	48	5	2	1	8	1	6	2	64	9
July	197	36	16	6	12	3	1	1	226	46
August	138	31	10	3	10	3	2	---	160	37
September	42	14	3	---	3	2	12	2	60	18
October	45	11	19	1	5	3	4	3	73	18
November	15	4	14	5	2	1	12	1	43	11
December	15	10	8	1	1	3	10	2	34	16
Totals	531	123	92	33	56	26	62	19	741	201

Poliomyelitis, 1914—Number of Cases Reported, by Months, by Counties.

County	January	February	March	April	May	June	July	August	September	October	November	December	Total
California.													
Alameda			1				1	3	1	1			7
Humboldt	2	1											3
Kings							4						4
Los Angeles	1	1	1	1	1		3	1					9
Marin											1		1
Monterey						1							1
Nevada							1						1
Placer			1			1							2
Riverside								1					1
Sacramento						1				1			2
San Francisco				3		4	3	3	2	2			17
San Luis Obispo								1					1
Santa Clara						1							1
Sonoma	1									1			2
Tehama		1											1
Tulare								1			1	1	3
Totals	4	3	3	4	1	8	12	10	3	5	2	1	56

Pollomyelitis, 1915—Number of Cases Reported, by Months, by Counties.

County	January	February	March	April	May	June	July	August	September	October	November	December	Total
California.													
Alameda					1	1			1				3
Contra Costa												1	1
Fresno					2	4		1	1	1	1		10
Humboldt	1												1
Kings			1										1
Los Angeles				1					4	2	9	7	23
Marin	1	1											2
Merced	1												1
Placer										1			1
Riverside	1							1	2				4
Sacramento	2											1	3
San Bernardino							1		2		1		4
San Francisco		1							1		1	1	4
Santa Clara				1									1
Santa Cruz						1							1
Tulare			1						1				2
Totals	6	2	2	2	3	6	1	2	12	4	12	10	62

Cerebrospinal Meningitis, 1914—Number of Cases Reported, by Months, by Counties.

County	January	February	March	April	May	June	July	August	September	October	November	December	Total
California.													
Alameda	1	1	1						1				4
Amador											1		1
Fresno	1												1
Humboldt					2								2
Imperial											1		1
Los Angeles		3	8	6	2	2	1		2	3	2		29
Marin	1												1
Merced							1						1
Monterey		1					1						2
Orange										1			1
San Diego		1							1	1			3
San Francisco	2	2	5	1		1	1			2	2	4	20
San Joaquin												1	1
Shasta		1											1
Tulare	1						1						2
Totals	6	9	14	7	4	3	5		4	7	5	6	70

Cerebrospinal Meningitis, 1915—Number of Cases Reported, by Months, by Counties.

County	January	February	March	April	May	June	July	August	September	October	November	December	Total
California.													
Fresno											1	1	2
Imperial			1										1
Kern							1						1
Los Angeles	3		4	3	2	2		2	1	1		1	19
Merced	1	3											4
Orange	4												4
San Francisco	1	2	2	2						1	1		9
Santa Barbara									1				1
San Joaquin		1			1	1							3
Tulare				1				1					2
Totals	9	6	7	6	3	3	1	3	2	2	2	2	46

SANITARY INSPECTIONS.

EDWARD T. ROSS, Sanitary Inspector.

During the biennial period, 1914-1916, many hundreds of premises were visited for the purpose of investigating sanitary conditions, and two extensive campaigns were waged to prevent the spread of disease.

In the month of April, 1914, a campaign was waged under the direction of the sanitary inspector in Hanford, to prevent the spread of typhoid fever. In order quickly to check the spread of the disease, experienced help was needed. Three experienced inspectors were borrowed from the United States Public Health Service and placed on the state pay roll to assist the inspectors provided by the city authorities. The city was divided into districts with an inspector assigned to each district. During the campaign many hundreds of premises were inspected and over 3,000 nuisances were abated. Two hundred and thirty-two metal garbage cans were provided and over 900 toilets were made fly tight.

Summary of Operations.

Inspections	1,170
Reinspections	3,311
Abatements	3,314
Garbage cans installed	232
Toilets placed in fly-tight condition	1,604
Privies demolished	76
Buildings and basements cleaned	101
Yards cleaned	670
Vacant lots cleaned	37
Streets cleaned	51
Stables cleaned	66
Stagnant water removed from vacant lots	21
Pools of stagnant water oiled, 43,675 sq. ft.	10
Loads of rubbish removed	301
Roller towels removed	49
Public drinking cups removed	69
Concrete floors installed, 3,965 sq. ft.	7
Loads of sand hauled by city team for filling pools ..	17
Creameries and dairies screened	11
Bonfires burning rubbish in city	183
Buildings screened	31
Garbage receptacles removed from streets and alleyways ..	91
Miles of irrigation ditches cleaned in the city	2

A campaign against rabies was waged in Modoc and Lassen counties from December 1, 1915, to June 30, 1916. On November 1, 1915, Modoc County was placed under quarantine by the State Board of Health, because of rabies, and on November 29, 1915, Lassen County was also placed under quarantine. During the above period the heads of over 200 animals, which were sent from these counties to the State Hygienic Laboratory for examination proved positive for rabies. The loss of stock in these counties because of rabies amounted to nearly \$100,000. Several hundred quarantine notices, trapping instructions, and quarantine rules were posted throughout the quarantined area and several thousand pieces of literature pertaining to rabies were distributed. A large number of public meetings were held in various towns in the quarantined area for the purpose of explaining the quarantine regulations to the citizens. Stock associations and county officials were interviewed at various times and their cooperation secured. Over 7,000 coyotes, 1,091 dogs, 790 domestic cats, 430 bob cats, 496 polecats and over 5,000 rabbits and squirrels were killed by shooting, trapping and poisoning operations.

Summary of Operations. Modoc and Lassen Counties Rabies Campaign.

Premises inspected for loose and unlicensed dogs	4,907
Dogs found without license	1,912
Dogs found with proper license, second inspection	987
Dog license application blanks issued	1,300
Dogs killed	1,091
Cats killed, domestic	790
Coyotes, killed by hunters or others using state poison	4,587
Coyotes brought in by citizens for bounty	2,575
Bob cats killed	430
Polecats killed	496
Rabbits shot for bait	2,602
Squirrels shot for bait	2,134
Poison baits placed by hunters	66,900
Traps placed by hunters	9,313
Poison issued, ounces	1,408
Poison issued, filled capsules	62,410
Empty capsules for poison issued	71,490
Notices posted, warning	1,257
Notices posted, quarantine	1,917
Notices posted, quarantine modification	1,666
Circular letters, literature, etc., mailed	61,169
Public meetings held	21

The following cases of suspected rabies were reported:

Cattle	441
Horses	52
Sheep	70
Hogs	20
Coyotes	106
Dogs	82
Bob cats	3
Cats domestic	6

The following animals were found dead, cause of death doubtful:

Cattle	839
Horses	232
Sheep	2,048
Hogs	60

Animals' brains shipped to the laboratory in Berkeley for examination:

Cattle	122
Horses	13
Sheep	17
Hogs	7
Dogs	34
Coyotes	81
Bob cats	4
Cats, domestic	1

Reports received show that the following cases proved positive for rabies:

Cattle	76
Horses	6
Sheep	10
Hogs	3
Dogs	22
Coyotes	73
Bob cats	4

Reports received from the laboratory show that the following cases proved negative:

Cattle	46
Horses	7
Sheep	7
Hogs	4
Dogs	12
Coyotes	8
Cats, domestic	1

From May 2 to 10, 1916, an investigation was made of the rabies situation in Fall River Valley section of Shasta County. As far as could be learned only one case of rabies had been found in this section.

On June 12, 1916, an investigation was made of the rabies situation in the vicinity of Loyalton, Sierra County. It was learned that at least four positive cases of rabies as well as a number of suspicious cases had been found from March to the time of the investigation.

Sanitary Surveys.

Sanitary surveys were made of 37 towns. In these surveys hundreds of inspections were made including sewage disposal systems, water supplies, hotels, lodging houses, schools, hospitals, jails, bakeries, restaurants, creameries, candy factories, meat and vegetable markets, groceries, stables, theatres, etc.

Summer Resorts.

One hundred and sixteen summer resorts were inspected. Insanitary conditions were found in practically all of them, due chiefly to improper methods employed in disposing of sewage, garbage, rubbish, etc. The sewage, in many instances is discharged into lakes, rivers or mountain streams. A reinspection was made of 24 of these resorts and all have complied with requirements recommended in reports submitted to the State Board of Health.

Railway Trains.

Fifty-one railway trains were inspected on various roads throughout the state. The coaches in general, except the smoking cars were usually found in good condition. In some instances, however, the toilets were neglected and proper ventilation was lacking. The dining cars throughout were usually found in good condition. In the majority of the smoking cars cuspidors were not provided and the floors and sidewalls were generally dirty, caused by the passengers spitting on the same. In the smoking cars where cuspidors were provided the floors were in clean condition.

Miscellaneous Inspections.

In addition to the above operations, the following premises were inspected:

Lodging houses	30
Canneries and fruit packing houses	51
Slaughterhouses	26
Meat and vegetable markets	47
Bakeries and restaurants	40
Creameries and dairies	27
Laundries	37
Hospitals and sanitariums	9
Public schools	21
Miscellaneous inspections	299

Reinspections.

Lodging houses -----	14
Canneries and fruit packing houses -----	20
Slaughterhouses -----	15
Meat and vegetable markets -----	20
Bakeries and restaurants -----	26
Dairies and creameries -----	11
Public schools -----	9
Laundries -----	7
	122

It was found during the reinspections that practically all the requirements recommended have been complied with.

Sixty samples of water were collected from various water supplies throughout the state and forwarded to the State Hygienic Laboratory for examination.

One hundred and twenty inspections were made in the State Fair Grounds during the season of 1914.

Three hundred and fifty-nine sanitary reports were submitted during the biennial period.

BUREAU OF ADMINISTRATION—FINANCE.

L. B. MALLORY, Assistant to the Secretary.

The State Board of Health has greatly extended the scope of its work during the past few years, resulting in a natural distribution of the various activities into subdepartments or bureaus, each presided over by a director.

1. The *Bureau of Administration* has general supervision over all departments and directs the policy and financial expenditures of the Board of Health. This bureau directly administers the following appropriations:

Contagious Diseases, chapter 337, 1915;
Printing, chapter 393, 1915;
Stenographic Service, chapter 393, 1915; and
Traveling and Contingent, chapter 393, 1915.

2. The *Bureau of Communicable Diseases*, chapter 223, 1905, located at Berkeley, maintains a laboratory for bacteriological and chemical analyses. It is very largely through this bureau that investigations of cases of contagious diseases and epidemics are made. The antirabic appropriation, chapter 393, 1915, is administered by this bureau.

3. The *Bureau of Foods and Drugs*, located at Berkeley, is charged with the enforcement of the Pure Food and Drug Acts, (foods) chapter 181, (drugs) chapter 186, 1907, and also administers the Cold Storage Act, chapter 360, 1913.

4. The *Bureau of Registration of Nurses*, chapter 319, 1913, has charge of the issuing of certificates to registered nurses, the examinations for same being held semiannually. The funds for the maintenance of this bureau are provided from the registration fee of \$10.00 paid by all who take the examinations or are accredited from other states.

5. The *Bureau of Sanitary Engineering*, chapter 478, 1915, located at Berkeley, has charge of the enforcement of the stream pollution laws. It makes examinations of water and sewage systems, and recommends the granting of permits for the operation of same.

6. The *Bureau of Tuberculosis*, administers the appropriation, provided in chapter 766 of 1915, for subsidizing county hospitals which have tuberculosis wards. The hospital management is required to maintain these wards according to standards established by the bureau and approved by the board.

The following financial statement gives a comprehensive idea of appropriations and expenditures. Where two amounts appear under a heading opposite an appropriation, the upper represents expenditures from July 1, 1914, to June 30, 1915, and the lower amount from July 1, 1915, to June 30, 1916.

FINANCIAL

Biennial Period July 1, 1914, to June 30, 1916—

Name of appropriation	Established	Reverting to general fund June 30, 1915	Chapter, 1915
1. Antirabic Virus	Chapter 391, 1913.....		393
2. Contagious Disease	Chapter 218, 1903.....		337
3. Hygienic Laboratory	Chapter 223, 1905.....	\$106 84	398
4. Nurses' Registration	Chapter 319, 1913.....		22 and 396
5. Cold Storage	Chapter 360, 1913.....	156 27	385
6. Foods and Drugs.....	Foods, Ch. 181; Drugs, Ch. 181-186, 1907; Ch. 104, 1909.....	544 13	393
7. Printing	1899		393
8. Office Equipment	Ch. 461, 1913.....		1913
9. Sanitary Engineering	Ch. 373; Ch. 478-649, 1915.....		478
10. Stenographic Service	Chapter 680, 1913.....	64 68	396
11. Traveling and Contingent.....	1870	1,989 00	398
12. Tuberculosis	Ch. 242-591, 1909; ch. 776, 1915.....	129 92	766
Totals			

STATEMENT.

Sixty-sixth and Sixty-seventh Fiscal Years.

Amount of appropriation	Amount brought forward	Received from other sources	Total	Expenditures		Balances
				1914-15	1915-16	
\$5,000 00	\$2,509 08	\$20 00 3,498 57 5,021 28	\$7,529 08	\$2,516 50	\$2,306 72	\$2,705 86
50,000 00	57,723 34	9,114 85 91 33 359 07	116,838 19	51,945 45	43,141 84	21,750 90
36,350 00	Reverted, June, 1915	450 40 1,501 00 4,535 34	36,800 40	9,993 99	17,470 09	9,336 32
Fees	44,383 38	6,036 34 300 00 1,600 00	50,419 82	6,325 78	5,793 87	33,300 17
Fees	975 37	1,900 00 391 64 1,062 40	2,875 37	1,116 22	1,418 21	340 94
58,000 00	2,296 38	1,444 04	61,740 42	24,534 60	21,358 21	15,297 61
8,000 00	665 39	-----	8,695 39	3,907 12	3,605 54	1,182 73
-----	168 30	-----	168 30	112 24	56 06	-----
30,000 00	New	342 55	30,342 45	-----	11,852 34	18,490 11
2,400 00	-----	-----	2,400 00	1,200 00	1,200 00	-----
35,400 00	224 67	1,184 94 1,175 41 2,360 35	37,985 02	4,677 48	14,105 44	19,202 10
75,000 00	4,546 12	8 00	79,554 12	4,007 36	6,409 89	69,136 87
\$300,150 00	\$113,522 08	\$21,676 53	\$435,348 56	\$110,386 74	\$129,218 21	\$195,743 61

FINANCIAL STATE

Expenditures

Name of appropriation	Salaries	Office expense	General expense
	\$*1,599 96 †1,599 96		\$189 91 202 59
1. Antirabic Virus	3,199 92	\$9 00	392 50
	*38,420 49 †27,761 92		24 00 447 91
2. Contagious Disease	66,182 41	8 10	471 91
	*7,693 35 †12,697 00	72 70 142 44	651 82 1,043 48
3. Hygienic Laboratory	20,390 96	215 14	1,694 80
	*3,416 00 †3,712 10		
4. Nurses' Registration	7,128 70		
5. Cold Storage	750 00		
	*15,207 74 †15,704 13	362 14 286 90	570 02 646 38
6. Foods and Drugs	30,911 87	649 04	1,216 40
7. Printing			
8. Office Equipment			
9. Sanitary Engineering	7,931 77	76 04	489 77
10. Stenographic Service	2,400 00		
	*2,419 84 †7,469 93	59 00 464 24	132 72 398 29
11. Traveling and Contingent	9,899 77	523 24	531 01
	*3,480 00 †3,785 80	29 00 69 21	
12. Tuberculosis	7,265 80	98 21	182 28
Totals	\$156,061 19	\$1,578 77	\$4,928 67

*Expenditures, July 1, 1914, to June 30, 1915.

†Expenditures, July 1, 1915, to June 30, 1916.

MENT—Continued.
Itemized.

Postage	Telephone and Telegraph	Traveling	Chemicals	Animals	Printing and Stationery	Bulletin
\$200 00 151 81				\$343 20 307 94		
\$351 81			\$11 75	651 14		
		\$835 11 999 52			\$197 82 192 36	
	\$83 89	1,834 63			390 18	
248 25 292 00		65 80 1,081 44	90 19 38 94	105 09 99 62	301 77 367 52	
540 25 620 00 215 00	67 57	1,147 21 776 73 955 49	129 13	204 71	369 29 906 67 651 07	
835 00		1,732 22			1,557 74	
20 00 35 00		38 30 405 75			89 83 55 07	
55 00		444 05			114 90	
221 00 160 00		4,487 10 3,670 73	249 40 128 76		214 00 204 53	
381 00		8,157 83	378 16		448 53	
					598 71 865 48	\$9,109 35 2,622 70
					1,464 19	5,732 05
74 00		1,001 88	397 69		298 03	
494 30 1,163 94	303 38 553 38	999 74 2,882 68				
1,658 24	856 76	3,882 42				
87 00 225 00		78 14 1,079 41			321 42 783 04	
312 00		1,157 55			1,101 46	
\$4,207 30	\$1,008 22	\$19,357 82	\$916 73	\$855 85	\$5,778 22	\$5,732 05

FINANCIAL STATE

Expenditures

Name of appropriation	Binding	Equipment	Automobile expense	Squirrel extermination
		\$170 43 23 67		
1. Antirabic Virus -----		194 10		
			\$1,814 33 1,478 80	*\$10,388 77 †10,023 41
2. Contagious Disease -----		101 01	3,287 63	20,623 18
		654 26 900 75		
3. Hygienic Laboratory -----		1,555 01		
4. Nurses' Registration -----				
5. Cold Storage -----		757 77		
		2,800 00 562 26		
6. Foods and Drugs -----		3,362 26		
	\$199 06 117 36			
7. Printing -----	316 42			
		112 24 56 06		
8. Office Equipment -----		168 30		
9. Sanitary Engineering -----	851 41		739 15	
10. Stenographic Service -----				
11. Traveling and Contingent -----			239 98	
12. Tuberculosis -----				
Totals -----	\$1,167 83	\$6,138 45	\$4,266 76	\$20,623 15

*Expenditures, July 1, 1914, to June 30, 1915.

†Expenditures, July 1, 1915, to June 30, 1916.

MENT—Continued.
Itemized—Continued.

Advertising	Rent in Los Angeles	Miscellaneous	Notary fees	Ophthalmia neonatorum	Supplies rabies campaign	Totals
		\$13 00				\$4,823 23
		181 00			\$1,023 31	\$65,087 25
		43 00 356 80				
		399 99		\$450 00		\$27,164 08
\$*19 18 +44 58		586 60 215 65				
63 76		802 25				\$12,119 67
		210 32 172 39				
		332 71				\$2,534 43
	\$162 00 162 00	171 55 332 52				
	324 00	504 07	\$113 00			\$46,446 16
						\$7,512 66
						\$168 30
		51 70				\$11,862 34
						\$2,400 00
		268 50 933 00				
		1,201 50				\$18,782 92
		11 80				\$10,132 10
\$63 76	\$324 00	\$3,548 02	\$113 00	\$450 00	\$1,023 31	\$239,083 13

REPORT OF THE BUREAU OF COMMUNICABLE DISEASES.

For the Biennial Period From July 1, 1914, to June 30, 1916.

By JAMES G. CUMMING, M.D., Dr. P.H., Director.

The work of the Bureau of Communicable Diseases may be considered under two main divisions: epidemiological investigations and laboratory work. With the increase in medical knowledge regarding modes of transmission and methods of prevention of communicable diseases, there has developed the epidemiological field of investigation. When, under the directorship of Dr. Wilbur A. Sawyer, the California State Hygienic Laboratory had been among the pioneers to incorporate this work with the laboratory routine, the original name of the laboratory was changed, in 1915, to the Bureau of Communicable Diseases. Preventive medicine is so recent a development that the cooperating sciences comprising it are yet in the process of coordination. Nevertheless the field investigation of outbursts of disease is the quickest, most complete, means of quelling an epidemic, and the corroborating work of the laboratory is becoming auxiliary. For example, a typhoid epidemic can be brought under immediate control only by a proper field reconnaissance followed by laboratory work. The eradication of hookworm infection among miners depends largely upon field work in conjunction with the laboratory. The control of epidemic rabies depends upon both field and laboratory work, as does the extermination of insect-borne diseases such as malaria and spotted fever; so, although the time is near at hand when the laboratory will be only auxiliary to this new field work, it may be pointed out that neither by itself can fulfill the present-day requirements of preventive medicine. The more active the field work in controlling the preventable diseases, the more rapidly will the results be shown in ultimately diminishing, not only the number of epidemics, but also sporadic cases; for in general it may be considered that all cases whether epidemic or sporadic arise from some previous one; so the aim of epidemiological reconnaissance is to break the chain of communication between the source of infection and the community, adding thereby to the span of human life. The following list of field investigations for this biennial period gives an idea of the scope of work covered by the division of epidemiology of the bureau.

DIVISION OF EPIDEMIOLOGY.

Although some of the special investigations listed in the following report are not strictly limited to the field of epidemiology, they will be reported here for convenience.

July—1914.

1. Investigation, by physiological tests, of the strengths of tinctures of digitalis and strophanthus found in the market (in cooperation with the State Food and Drug Laboratory).
2. Investigation of a typhoid infection contracted in the laboratory.
3. Investigation of reported cases of typhoid fever in persons who had been vaccinated against typhoid fever.
4. Completion of an investigation into the bacterial contents of tomato products.

August.

5. Investigation of a water-borne typhoid epidemic at Healdsburg.
6. Beginning of an investigation of a disease reported to be prevalent among the veterans of the Spanish war.
- 1a. Completion of an investigation, by physiological tests, of the strengths of tinctures of digitalis and strophanthus found in the market (in cooperation with the State Food and Drug Laboratory).
7. Investigation of smallpox in Humboldt County.

September.

- 6a. Completion of an investigation of a disease reported to be prevalent among veterans of the Spanish war.
8. Statistical study of the extent and distribution of rabies in California during the biennial period ending June 30, 1914.

October—none.**November.**

9. Investigation of sanitary conditions and suspected scarlet fever in Good Templars' Home, near Vallejo.
10. Investigation of a case suspected of being Verruca Peruana.

December.

11. Investigation of a human case of rabies at Anaheim.
12. Investigation of a human case of rabies at Hanford.
13. Investigation of the methods of transmission of epidemic poliomyelitis.

January—1915.

14. An investigation of the results of the use of typhoid vaccine in the civil population of California.
15. A study of methods of preventing deterioration of sensitized typhoid vaccine while on storage after distribution.
16. An investigation, through correspondence, of the situation with regard to rabies in those parts of Oregon and Nevada adjacent to Modoc County.
17. A field investigation of epidemic cerebrospinal meningitis near Los Banos.

February.

18. A field investigation of the diphtheria epidemic at Petaluma.
19. A field investigation, in cooperation with the representative of the United States Public Health Service, of the rabies situation in Modoc County.
- 14a. Continuation of an investigation of the results of the use of typhoid vaccine in the civil population of California.
- 15a. Continuation of a study of the methods of preventing deterioration of sensitized typhoid vaccine while on storage after distribution.
20. An investigation of a case of human rabies at Santa Cruz.
21. An investigation of a case of human rabies in San Francisco due to a dog bite received in Watsonville.

March.

- 14b. Continuation of an investigation of the results of the use of typhoid vaccine in the civil population of California.

April.

22. Investigation of the later history of a typhoid carrier (H.O.) under quarantine by the California State Board of Health.
- 14c. Continuation of an investigation of the results of the use of typhoid vaccine in the civil population of California.
23. Investigation of the sanitary aspects of the proposed temporary dam across the Russian River at Healdsburg.

May.

24. Investigation of a human case of rabies in Emeryville.
25. A field investigation of watersheds in the bay region.
- 14d. Continuation of an investigation of the results of the use of typhoid vaccine in the civil population of California.
26. Investigation of a milk-borne typhoid fever epidemic at Colusa.
27. Investigation of two cases of temporary local paralyses complicating the anti-rabic treatment.

June.

28. Investigation of a human case of rabies in Los Angeles.
29. Cooperation with the San Francisco Health Department in an investigation of diphtheria.
30. Investigation of a case of paralysis erroneously reported as rabies.

July.

31. Investigation of an erroneous report that there was cholera at San Pablo.
32. Investigation of a case, falsely suspected of being plague, at Sunnyvale.
33. Investigation of a case of streptococcus infection, suspected of being plague, at San Leandro.
34. Laboratory investigation of a human case of plague at Concord.

August.

35. An investigation of typhoid fever on a ranch in Sonoma County near Healdsburg.
36. Examination of two disinfectants for their phenol coefficients.

September.

37. An investigation of reported cases of typhoid fever among employees of the State Highway Commission near Napa.
38. Investigation of a complaint regarding breeding of mosquitoes in a pool situated at Orland.
39. Investigation of malarial conditions at Orland.

October.

40. An investigation of diphtheria in the Fairmont School at Rust.
41. Investigation of malaria in California.

November.

42. An investigation of an outbreak of typhoid fever at Santa Barbara.
43. An investigation of a reported epidemic of diphtheria at Daly City.
44. An investigation of a milk-borne epidemic of typhoid fever at Richmond.
45. Investigation of malaria in California.

December.

46. Investigation of malaria in California.
47. Investigation of rabies in Modoc and Lassen counties.

January—1916.

48. An investigation of the typhoid fever situation at Redding.
49. An investigation of a suspected case of smallpox at Stockton.
50. Investigation of malaria in California.

February.

51. An investigation of hookworm disease in the gold mines at Jackson.
52. An investigation of typhoid fever at Antioch.
53. An investigation of smallpox at the Montezuma mine, Placerville.
54. An investigation of the water supply of Santa Barbara.

March.

55. An investigation of dysentery at Colfax.
56. An investigation of dysentery at Napa.
57. An investigation of smallpox at Placerville.

April.

- 58. An investigation of dysentery at Escalon.
- 59. An investigation of scarlet fever at Los Banos.
- 60. An investigation of scarlet fever at Patterson.
- 56a. Continuation of an investigation of dysentery at Napa.
- 51a. Continuation of an investigation of hookworm in the gold mines of California.

May.

- 61. An investigation of scarlet fever at Auburn.
- 62. An investigation of a typhoid fever epidemic at Helm.
- 63. An investigation of a suspected case of typhus fever at Oxnard.
- 64. An investigation of scarlet fever at Patterson.
- 51b. Continuation of an investigation of hookworm in the gold mines of California.
- 65. An investigation of a case of hydrophobia at Bieber.
- 66. Investigation of Rocky Mountain spotted fever in Modoc and Lassen counties.
- 67. An investigation of diphtheria at Mokelumne Hill.

June.

- 68. An investigation of a typhoid fever epidemic at Helm, Fresno County.
- 69. An investigation of typhoid fever at Wheatville.
- 70. An investigation of a typhoid fever outbreak at Maricopa and Taft.
- 71. An investigation of diarrhea at Protestant Sacramento Orphanage.
- 51c. Continuation of an investigation of hookworm in the gold mines of California.
- 72. An investigation of typhoid fever on the S. S. Wasp.
- 73. An investigation of a reported epidemic of dysentery at Paso Robles.

LABORATORY DIVISION.

The laboratory work of this bureau may be considered under two subdivisions:

First, preventive therapeutics: preparation of antirabic vaccine and treatment of patients; preparation and free distribution of antityphoid vaccine; and free distribution of ophthalmia neonatorum outfits to physicians and midwives.

Second, biological examinations: laboratory diagnosis of submitted specimens; swabs for diphtheria, stools for hookworm, tissue for anthrax, blood smears for malaria, blood serum for syphilis (Wassermann test), blood for typhoid fever (Widal test), blood for spotted and typhus fever, pus for gonococcus infection, brain tissue for rabies, tissue for plague, and sputum for tubercle bacilli. These examinations are made at the request of physicians only, and are made without charge.

I. Preventive Therapeutics.**Rabies.**

The Pasteur antirabic vaccine is prepared at the main laboratory of this bureau. It is administered at the main laboratory in Berkeley, at the branch laboratories in Sacramento, Fresno and Los Angeles, also by official bacteriologists who in different cities are deputized by the State Board of Health, at the Letterman General Hospital, and the Mare Island Navy Yard. The treatment is given free, only on the approval of the local health officer or on the application of the patient, parents or guardian, with the statement that it would be a hardship to pay the usual fee. Inasmuch as all the work of this bureau—field investigations, laboratory examinations, preparation and distribution of vaccines, with the exception of antirabic vaccine—is without charge to all citizens

of California. I would respectfully recommend to the State Board of Health that the antirabic vaccine be placed on the same basis of free treatment to all citizens needing it by this bureau, its branches and deputized bacteriologists.

A total of 202 patients were given the Pasteur preventive treatment during the biennial period. Although there has been an extensive epidemic of rabies among coyotes in Modoc and Lassen counties, resulting in the transmission of the disease to stock, and representing an enormous loss to the ranchmen, yet the number of human cases treated is only about one-third the number treated during the previous period. Patients numbering 151 were bitten by dogs, seven by cats, four by coyotes, one by a Guinea pig, one by a skunk, two by horses, seven were exposed to the saliva of rabid cows, and 16 were exposed to a case of hydrophobia. Among those treated, four died from hydrophobia. Two of these developed the disease during the course of treatment, and one four days, another 15 days, after the completion of the treatment. It may be pointed out that three of these fatal cases were bitten on the head in close proximity to the central nervous system, and had the cauterization of the bites in these cases been more thorough, the chances of successful Pasteur treatment would have been greatly increased. Much depends upon the destruction of the virus planted within the wound.

No untoward effects, as paralysis or abscesses, resulted from the treatment; although the usual mild anaphylactic reaction occurred in most cases, and in one there was vomiting after each treatment. The method of preparation of the vaccine was that adopted by the United States Public Health Service.

Of the 202 patients treated, 168 were bitten by animals proved rabid by laboratory examination. Statistics show that the mortality among untreated cases is from 20 to 30 per cent, and as 168 of our patients were bitten by animals known to be rabid, attention may be called to the fact that at least 35 lives have been saved to the commonwealth during the last biennial period. For purposes of comparison, a summary of the laboratory records of all the patients and the biting animals are included in Table I, where it will be noted that 80 per cent of the patients are treated as the result of positive laboratory findings in the biting animals, and that a relatively small percentage is treated merely on the suspicion that the animal was rabid. There is presented by counties in Table II the total number of Pasteur patients treated.

TABLE 1.—Pasteur Treatments, July 1, 1914, to June 30, 1916.

Place of administration	Number of cases	Treatments completed	Deaths	Diagnosis in biting animal based on—		
				Negri bodies or inoculation	Observed symptoms	Suspicious history
Main Laboratory at Berkeley.....	83	81	4	58	17	*8
Northern Branch at Sacramento.....	7	5		6	1	0
San Joaquin Valley Branch at Fresno.....	8	8		8	0	0
Southern Branch at Los Angeles.....	34	34		33	1	0
Laboratory of the Sacramento Board of Health, by deputized bacteriologist.....	10	9		9	1	0
Laboratory of the Los Angeles Board of Health, by deputized bacteriologist.....	30	28		28	2	0
Laboratory of the San Diego City Board of Health, by deputized bacteriologist.....	7	7		7	0	0
Laboratory of the San Francisco Board of Health, by deputized bacteriologist.....	20	18		17	1	2
Letterman General Hospital, Presidio, San Francisco, by deputized bacteriologist.....	2	2		1	1	0
United States Naval Hospital, Mare Island, by deputized bacteriologist.....	1	1		1	0	0
Totals	202	193	4	168	24	10

*Including 4 laboratory helpers.

TABLE 2.—Distribution of Treated Cases by Counties.

Alameda	36	Shasta	3
Los Angeles	36	San Luis Obispo.....	2
Lassen	15	Solano	2
Modoc	15	Kings	1
San Diego	14	Marin	1
San Francisco	13	Napa	1
Santa Cruz	11	Placer	1
Sacramento	9	San Joaquin	1
Fresno	8	Santa Barbara	1
Orange	7	Sierra	1
Contra Costa	6	Yolo	1
Stanislaus	5	Flagstaff, Ariz.	1
Imperial	4		
Tulare	4	Total	202
Santa Clara	3		

Antityphoid (Prophylactic) Vaccine.

Since July 1, 1914, to June 30, 1916, 12,754 complete treatments of antityphoid vaccine have been prepared and distributed free among 248 physicians.

The vaccine has been furnished in large lots for militia men, for employees in the oil fields and at lumber camps, and for state prisoners, as well as in small quantities to physicians for the immunization of individual patients.

Ophthalmia Neonatorum Prophylaxis.

In complying with the law, chapter 724, Statutes of 1915, entitled "An act to prevent blindness from ophthalmia neonatorum," the California State Board of Health made provision for the gratuitous distribution of a specially prepared outfit containing 1 per cent silver nitrate for the prevention of ophthalmia neonatorum. About ten thousand of these outfits, together with directions for use, have been distributed among city and county health officers, midwives, registered

physicians, hospitals and depositories of this bureau. These outfits may now be obtained without cost from any health officer, from the main laboratory of this bureau or at any one of the two hundred depositories in the various cities and towns throughout the state. Accompanying each outfit is a copy of the law relative to the powers and duties of the State Board of Health and the duties imposed upon physicians or any other person lawfully engaged in the practice of obstetrics or assisting at childbirth. This distribution of information relative to the law has already had effect in stimulating the reporting of blindness. Such reports are essential, not only to make more accurate the vital statistics of this state, but also because any measure for the prevention of blindness tends to decrease the future tax burden of the community; in addition, it is hoped that the free distribution of these outfits with their accompanying information will do much to stimulate the practice of prophylaxis in ophthalmia neonatorum.

United States statistics for 1910 show that there were 1,329 blind persons in California. In at least 20 per cent, or 265 of these, the sight could have been saved by a simple prophylactic application. It is estimated that there will be about eighty thousand births in this state during the next biennial period, and as it is expected that we can reach at least one-third of these, I would respectfully recommend that the sum of \$1,575 be provided for the purchase of thirty-five thousand ophthalmia neonatorum outfits, and that an additional sum of \$350 be provided for the necessary postage.

II. BIOLOGICAL EXAMINATIONS.

Since the establishment of the Hygienic Laboratory, July 1, 1905, there has been a substantial increase in the number of laboratory examinations each successive biennial period. The number of examinations has increased from about 2,000 for the early biennial period to over 23,000 for the last period. This marked increase indicates that physicians are realizing the value, not only to public health, but to private practice of this diagnostic work. In Table IV there will be found statistics for the successive biennial periods. It is important to notice the rate of increase and the number of examinations for each successive period; furthermore, the number of examinations by diseases are all increased with the exception of plague. In Table IV there is presented for the last biennial period the number of examinations and results, according to diseases, for the successive six-month periods.

In Table III it will be noted that there has been an increase in the total number of examinations for each of the successive six-month periods, and this notwithstanding the fact that the making of water analyses has been transferred from this bureau to the Bureau of Sanitary Engineering.

TABLE 3.—Number of Examinations and Results, July 1, 1914, to June 30, 1916.

	Anthrax		Diphtheria		Gonococcus infection		Hookworm	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1914.....	12	42	634	2,011	12	74	-----	5
January to July, 1915.....	4	53	1,222	4,220	91	218	-----	4
July to December, 1915.....	7	49	1,281	4,124	112	243	-----	2
January to June, 1916.....	8	30	997	3,296	101	212	413	1,246
Totals	26	144	4,184	13,651	316	747	413	1,256

TABLE 3.—Number of Examinations and Results, July 1, 1914, to June 30, 1916—Continued.

	Malaria		Plague		Rabies		Syphilis	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1914.....	15	70	-----	1	42	97	39	277
January to July, 1915.....	3	36	-----	-----	138	97	66	673
July to December, 1915.....	7	56	1	3	32	65	68	617
January to June, 1916.....	16	114	-----	-----	180	344	100	889
Totals	41	276	1	4	292	603	273	2,456

¹Including 2 from the state of Oregon.²Including 2 from the state of Nevada.

TABLE 3.—Number of Examinations and Results, July 1, 1914, to June 30, 1916—Continued.

	Tuberculosis		Typhoid		Water pollution		Miscellaneous		Total	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1914.....	64	300	179	509	149	295	25	58	1,171	3,739
January to July, 1915.....	100	395	77	392	123	223	14	29	1,738	6,310
July to December, 1915.....	112	384	87	501	141	229	9	32	1,857	6,395
January to June, 1916.....	120	427	50	485	-----	-----	11	29	1,991	7,021
Totals	396	1,506	393	1,927	413	747	59	148	6,757	23,465

TABLE 4.—Increase in Number of Examinations, July 1, 1905, to June 30, 1916.

	Anthrax	Diphtheria	Gonococcus infection	Hookworm	Malaria	Plague
First year of the laboratory, July 1, 1905, to June 30, 1906		330				1
Biennial period, July 1, 1906, to June 30, 1908		¹ 1,231				² 13
Biennial period, July 1, 1908, to June 30, 1910		³ 2,793			58	
Biennial period, July 1, 1910, to June 30, 1912	27	2,267	46	9	88	5
Biennial period, July 1, 1912, to June 30, 1914	85	3,337	353	15	191	7
Biennial period, July 1, 1914, to June 30, 1916	144	10,884 ⁴	747	1,255	276	4
Totals	256	20,792	1,146	1,280	616	30

TABLE 4.—Increase in Number of Examinations, July 1, 1905, to June 30, 1916—Continued.

	Rabies	Syphilis	Tuberculosis	Typhoid	Water pollution	Miscellaneous	Total
First year of the laboratory, July 1, 1905, to June 30, 1906			54	32	67	96	¹ 590
Biennial period, July 1, 1906, to June 30, 1908			255	185	57	504	2,245
Biennial period, July 1, 1908, to June 30, 1910	37		497	330	95	145	3,955
Biennial period, July 1, 1910, to June 30, 1912	243		716	667	136	69	4,273
Biennial period, July 1, 1912, to June 30, 1914	770	142	908	1,242	309	150	7,512
Biennial period, July 1, 1914, to June 30, 1916	603	2,456	1,506	1,927	747	148	20,648
Totals	1,653	2,598	3,936	4,383	1,411	1,112	39,213

¹One year only.²Exclusive of 5,009 diphtheria examinations made in special examinations of school children in Berkeley, Oroville, Hayward and Colfax.³Exclusive of 1,844 examinations of rats from Berkeley. The expense was borne by Berkeley.⁴Exclusive of 6,325 diphtheria examinations made in special examinations at the Southern California State Hospital.⁵Exclusive of 2,815 diphtheria examinations made in special investigations of school children.

Anthrax.

Although anthrax is rarely present in the human being and is not a very prevalent disease among animals in this state, yet the early diagnosis of a single case in a herd is of economic value to the rancher and of health importance to the populace. Of 144 specimens examined, 26 were reported positive for this disease. All positive specimens are reported not only to the sender of the specimen, but also to the State Veterinarian.

Diphtheria.

The increase of 225 per cent in the number of routine diphtheria examinations shows the recognition by the medical profession of the value of this means of identifying carriers and of determining the release from quarantine of those convalescent. The local health officer alone has power to institute or raise quarantine in cases of diphtheria;

so all negative, as well as positive specimens, are reported to him as well as to the attending physician. The percentage of increase does not include 2,815 special examinations among school children.

Gonococcus.

Since it is estimated that gonorrhœa is responsible for about 75 per cent of gynecological cases, and about 20 per cent of all blindness in infants, not to mention the results of the disease in the male, it is patent that physicians should resort more freely to the laboratory diagnosis of this disease. The eugenic movement should convince laymen, as well as physicians, of the advisability of a general medical examination of men before they marry, and this should include as a routine the examination for venereal disease.

Hookworm Infection.

An investigation to determine the prevalence of hookworm infection among California miners was taken up in March, 1916. The State Board of Health, the State Industrial Accident Commission, and the Federal Bureau of Mines allied their forces in the campaign against this infection. As the disease could be considered an industrial accident, and as it can be carried from the mines of one state to those of another, and as it is dangerous, communicable, and preventable, each of the interested organizations is desirous of stamping it out. Mr. Joseph H. White, of the Federal Bureau of Mines, devoted four months to the study of the sanitary conditions in the mines. As a result of his investigation, Mr. White has made recommendations for improvements in toilet and drainage facilities. Of 1,256 specimens examined by this bureau, 413 were found positive for hookworm infection. In fact, in one of the mines 77 per cent of the underground men were infected. On the other hand, in certain mines, the percentage of infection is low, yet the prevalence of the infection among California miners means a great economic loss to laborers and to employers owing to lowered efficiency and increased sickness rate. The infection is preventable by instituting sanitary precautions, and recommendations for sanitary improvements have been made to the superintendents of the various mines. Hookworm infection is easily curable and a large percentage of those found infected have been cured by routine treatment with chenopodium. There are in California about 10,000 miners, all of whom should be examined as soon as possible. Those infected should be treated, then re-examined.

Malaria.

Aside from the laboratory routine examination of suspected malarial specimens this bureau is carrying on a field investigation with the idea of determining the endemic index of this disease. At the present stage of development of this new field work, it would appear from the endemic index that the disease is as prevalent in certain sections of this state as in certain malaria-ridden southern states.

Aside from this work, the purpose of which is to determine the prevalence of the disease in the human being, a mosquito survey was undertaken. Professor W. B. Herms, the consulting parasitologist of this bureau, assisted by Mr. S. B. Freeborn, is making an extensive

survey of the northern half of the state during this summer. The object of this survey is to determine the foci of prevalence of the various species of the *Anopheles* mosquito and to devise means for the eradication of this menace to public health.

It is a fact that many residents, even in the most highly infected malarial districts of California, have their misgivings, not only as to the prevalence of malaria, but also as to the relationship the mosquito bears to the transmissibility of this economically wasteful disease. Particularly is this so in the case of the older residents, and many loyal citizens persist, in spite of evidence to the contrary, that "there is no malaria in our town." In one county in particular it may be pointed out that the workingman denies himself the customary vacation, anticipating enforced idleness during his annual malaria visitation. There is a mining town that has been malarial-ridden for years and during the two months of greatest prevalence there is a serious labor problem, owing to absences resulting in an economic loss both to the operator and the laborer. During the last three years, there has been a movement, led by the more intelligent, to install a sewage system and provide for proper drainage of mosquito-breeding foci. This movement has been opposed by a class who do not realize the ravages of the disease, and the necessity of proper sanitary measures leading to the abatement of mosquito breeding. Towns of this type should have community instruction in all matters regarding malaria. A field man, having a knowledge of the diagnosis, treatment and control of malaria, and provided with a laboratory outfit—microscope, stains, and slides—should spend a sufficient time in such communities demonstrating the various phases of the malaria problem so that there will be no question in the minds of the laity as to the actual prevalence of the disease and the benefits derived from treatment and *mosquito control*.

I therefore respectfully recommend that provision be made for a full time man at a salary of \$1,800 per year and traveling expenses, whose duty will be to carry on intensive work in the eradication of malaria.

Plague.

Owing to the eradivative measures employed for the extermination of squirrels, only one case of plague is reported for the last biennial period, as contrasted with three for the previous one. Case N. G., Moraga, California, age 21, track laborer on railroad, slept on Moraga railway station platform the night of July 9, 1915. He developed symptoms of illness July 13th. On examination, a bubo was found in the right femoral region. On aspiration a small amount of serum was obtained which on being stained revealed the presence of numerous small bacilli with rounded ends and some showing bipolar staining. A culture of the aspirated fluid was inoculated into two guinea pigs. These died in five days. The post-mortem findings in these were those of plague. The organisms isolated from the spleen were both morphologically and culturally typical for *Bacillus pestis*. The patient had all the signs and symptoms of the bubonic form of plague. He died on the eighth day of illness, but unfortunately an autopsy was not obtained.

Rabies.

The total number of examinations of suspected rabid animals has decreased 20 per cent for this period. Moreover, there has been the large decrease of 110 per cent in the number of positive findings among the specimens examined. This shows that health authorities are not relying on a diagnosis from symptoms alone but are resorting to the laboratory report for a definite diagnosis. In Table V is presented by months the records of the examinations of specimens for rabies. In Table VI there is brought together by counties the positive specimens of rabies. The large number of specimens from Modoc and Lassen counties is accounted for by the occurrence of an epidemic, chiefly among coyotes. The transmission of the disease to the human being, cattle, and sheep—resulting in a large financial loss to live stock men—was made the basis of a vigorous campaign against coyotes by the California State Board of Health. Although the disease has involved new areas it is becoming less prevalent, largely because of the general recognition of the means of control.

TABLE 5.—Examination of Suspected Rabid Specimens by Months.

Month	Result of examinations			Total	Positive diagnosis based on—		Animals found positive						Patient treatments necessitated.
	Positive.	Negative.	Inconclusive.		Finding of Negri bodies.	Animal inoculations.	Dogs.	Cats.	Humans.	Cows.	Coyotes.	Others identified.	
1914—													
July	2	15	1	18	2		4						2
August	4	5	1	10	4		3	1					1
September	9	9	4	22	9		8				horse		8
October	4	7		11	4		4						2
November	9	6	1	16	9		8	1					4
December	12	6		18	12		12						7
1915—													
January	6	8		14	6		6						5
February	7	10		17	7		5		2				3
March	8	11		19	8		8						9
April	4	11		15	4		4						
May	7	13		20	7		7						4
June	3	6	1	10	3		2	1					2
July	3	3	1	7	3		3						4
August		5		5									
September	1		1	2	1		1						
October	6	7	2	14	5	1	1			1	4		
November	10	4	6	15	5	5	5			3	2		3
December	13	9	2	21	10	3	4			3	4	12	
1916—													
January	19	7		24	17	2	8			3	1	b'cat	2
February	42	35		73	38	4	11			13	14	24	2
March	52	47		96	49	3	12			21	14	25	10
April	28	23	2	51	26	2	10			8	7	43	3
May	31	25	1	57	31		6		1	5	12	27	4
June	8	29	4	41	8		2			3	3		1
Totals	288	301	27	596	268	20	134	3	3	60	61	22	76

¹Horse, unknown.²Sheep, ram, two horses.³Horse, sheep, two bobcats, goat.⁴Horse, sheep, hog.⁵Horse, four sheep, wildcat, unknown.

TABLE 6.—Positive Cases of Rabies by Counties.

Alameda	15	San Francisco	2
Contra Costa	5	San Mateo	7
Fresno	7	Santa Barbara	1
Imperial	6	Santa Clara	8
Kings	7	Santa Cruz	7
Lassen	55	Shasta	10
Los Angeles	1	Sierra	4
Madera	2	Siskiyou	3
Marin	1	Sonoma	1
Modoc	107	Stanislaus	1
Napa	1	Tehama	1
Nevada	1	Tulare	9
Placer	1	Tuolumne	6
Plumas	2	Yuba	1
Riverside	4		
Sacramento	1	Total	288
San Benito	3	State of Oregon	2
San Bernardino	6	State of Nevada	2
San Diego	3		

Syphilis.

During the last biennial period, 2,456 specimens of blood were examined by the Wassermann test; 273 of these, or 10.6 per cent, were found positive for syphilis. The specimens were submitted from 66 towns and by 192 physicians. The following public institutions have submitted many specimens for diagnosis:

University of California Infirmary.
 Alameda County Infirmary.
 Fresno County Hospital.
 San Joaquin County Hospital.
 San Jose County Hospital.
 Sacramento Settlement Association.
 Alameda Society for the Study and Prevention of Tuberculosis.
 Baby Hospital, Oakland.
 Oakland College of Medicine.
 Folsom State Prison at Represa.
 California State Prison at San Quentin.
 California School for Girls, at Whittier.
 Whittier Reform School for Boys.
 Riverside Cement Works.

Nearly all specimens received from the above institutions were from persons suspected of having syphilis. On the other hand, the Riverside Cement Works—a private institution—has sent a specimen from every employee or applicant for employment, whether the disease was suspected or not. This progressive company has made it compulsory for every employee of this concern to submit to a routine medical examination, a part of which is the blood test for syphilis. Among these men, most of whom are foreigners, a number give positive reactions but show no clinical manifestation and deny infection. The investigation has in several instances demonstrated to this company the important relationship between syphilis and industrial accident and insurance.

Tuberculosis.

The examination of sputum, and sometimes urine, from suspected cases of tuberculosis has increased 60 per cent for this biennial period. Although the increase was large, the total number of examinations was

only 1,506. Inasmuch as the possibility of arriving at a diagnosis through laboratory examination is good in the early stages of this disease, this bureau hopes to be of service to an increasing number of physicians in the campaign against tuberculosis.

Typhoid Fever.

There was an increase of 55 per cent for this biennial period in the number of Widal tests, although the relative total remained about the same for the successive six-month periods. It is to be noted, however, that there is an increase in the number of positive findings. The Widal test is applicable both in the diagnosis of typhoid and the identification of the carrier; for the latter purpose it is not decisive.

It is, of course, recognized that every case of typhoid should be investigated as to the source of infection. The thoroughness as well as the number of such investigations must depend upon the size of the field and of the laboratory force at the disposal of this bureau.

Water Pollution.

With the establishment of the Bureau of Sanitary Engineering, August 8, 1915, the Bureau of Communicable Diseases was relieved of water analysis and other work allied to sanitary engineering. The necessity for a separate bureau has been demonstrated by the work accomplished by this new organization, under the directorship of Mr. C. G. Gillespie.

Miscellaneous Examinations.

The miscellaneous tests include examinations of spinal fluid for tubercle bacilli and meningococci, swabs for glanders bacilli, blood and stools for typhoid and dysentery bacilli, urine for tubercle bacilli, canned milk and eggs for the degree of bacterial contamination, and blood for spotted and typhus fevers.

Examination of Specimens for Cities and Towns.

In Table VII, the 23,465 examinations do not include service for cities having a population of over 25,000, which communities are expected to supply their own free laboratory service. In this table when such cities are recorded the specimens submitted were either for out-of-town patients or from state institutions.

REPORT OF THE STATE BOARD OF HEALTH.

TABLE 7.—Examinations by Towns and Cities.

	July to December, 1914	January to June, 1915	July to December, 1915	January to June, 1916	Total
Adin	1	68	1	6	76
Agnew	8		4	6	18
Alameda	75	112	115	185	487
Albany	1		11	65	77
Alhambra	51	59	68	16	189
Alpaugh	2	2	4		8
Altadena			10		10
Alto			1	1	2
Alto Loma		2			2
Alturas	2	311	400	105	818
Alviso			5		5
Amadee				9	9
Amador				*1,237	1,237
Anahelm	30	30	10	2	62
Anderson	10	3	6	3	22
Angels Camp	18	10	37	96	161
Angiola				2	2
Antioch	5	14	7	12	38
Arbuckle	4	6	5	5	20
Arcata			2		2
Arenette		1			1
Arlington			1	1	2
Arroyo Grande	1	2		2	5
Artesia			1	2	3
Ashland			2		2
Atascadero		2			2
Athens	1		9		10
Athens Hill			1		1
Atwater	2		1	1	4
Auburn	8	3	1	2	14
Avalon	4	6			10
Avila				2	2
Azusa	4	5	12	14	35
Bakersfield	142	640	229	116	1,127
Baldwin Park		1	1	2	4
Banning	7	1	7		15
Barber			1		1
Barstow		2	1	3	6
Bartlett Springs			1		1
Bay Point			2		2
Beaumont				3	3
Bellflower			1	1	2
Bell Station	7	4		2	13
Belvedere	1		7	1	9
Benicia	5	18	5	1	29
Ben Lomond			1		1
Berkeley	55	78	37	48	218
Berkeley (University of California Infirmary)	265	157	231	213	866
Beverly Hills		7		1	8
Bieber				3	3
Biggs			1		1
Bishop	1			1	2
Blanco			1		1
Bloomington		1		1	2
Blue Lake			1	1	2
Blythe	2	5	3	6	16
Boca	1			1	2
Bonita			2	2	4
Bonita Meadows		1			1
Boonville			1		1
Bowman				1	1
Boyes Springs			1		1
Brea	1	1			2
Brentwood	1	1			2
Bridgeport				1	1
Broderick		2			2
Brown				1	1

*Hookworm examinations of miners.

Table 7.—Examinations by Towns and Cities—Continued.

	July to December, 1914	January to June, 1915	July to December, 1915	January to June, 1916	Total
Bryan		1			1
Burbank	16	2	6	7	31
Burlingame	1	2			3
Byron			2	1	3
Calexico	3	6	3		12
Calistoga	12	4	4	2	22
Calabasas	2				2
Calwa		2		2	4
Campbell	3		8		11
Camp Meeker		1			1
Campo Seco			1		1
Canby				3	3
Carlsbad	2				2
Carmel				3	3
Carpinteria				3	3
Casa Blanca				1	1
Casa Loma		1			1
Casa Verdugo	1	1		1	3
Caspar				1	1
Cayucos		1			1
Cedarville			2	7	9
Centerville	5	2			7
Ceres	1	4	1	4	10
Cerritos			8		8
Charter Oak		4	1	1	6
Cherokee				1	1
Chicago Park		1			1
Chico	38	27	63	52	180
Chilecot				1	1
Chinese Camp			1		1
Chino		5	13	5	23
Chula Vista		1	3	2	6
Claremont	2	2	18	1	23
Claus				27	27
Clayton				2	2
Cloverdale	6	6		7	19
Clovis		7	1	1	9
Coachella		1	1	2	4
Coalinga	1			6	7
Colfax	2	32	11	14	59
Collinsville				1	1
Colma	14		3	2	19
Colton	14	3		7	24
Colusa	56	124	65	115	350
Comptche		1			1
Compton	4	7	3	1	15
Concord	11	21	13	9	54
Copperopolis	4			1	5
Corcoran	17	15	21	22	75
Cordeila				1	1
Cornell		1			1
Corning	2	8		2	12
Corona	3	2	7	5	17
Corte Madera			1		1
Cottonwood		1			1
Courtland	2	1			3
Covina	15	40	31	15	101
Cowell	1		1		2
Creston		1			1
Crockett		1			1
Crows Landing		2		7	9
Cueamonga		1	1		2
Culver City			1		1
Cummings			1		1
Cupertino			2		2
Daggett		1			1
Daly City		1	203	52	256

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Table 7.—Examinations by Towns and Cities—Continued.

	July to December, 1914	January to June, 1915	July to December, 1915	January to June, 1916	Total
Danville			7	19	26
Davis	1	2	16	9	28
Daviaville	1				1
Decoto	4				4
Delano				2	2
Del Monte	2				2
Del Rey	8	2	7		17
Denair	2		1		3
Dinuba		2	6	2	10
Ditman	2				2
Dixon		10	1	3	14
Dominguez			11		11
Doon			1		1
Dorris	3		2	1	6
Dos Palos	11	26	21	15	73
Downey	1	4	24	174	203
Doyle				8	8
Duarte	1	1	1		3
Dunsmuir	3	6	2	2	13
Durham			7	1	8
Dutch Flat		1			1
Eagle Rock	3	2	3		8
Eagleville		1	6	32	39
East Auburn	8	7	6	3	24
East Newport		2			2
Easton				1	1
Echo	2				2
Edgemont				2	2
Edgewood		1			1
El Centro	2	2		19	23
Fiftman Station			6		6
Elizabeth Lake	1				1
Elk Grove	32	12	5	9	58
Elmhurst				1	1
Elmira			1		1
El Monte		9			9
El Pismo	1				1
El Portal	2		1		3
Elsinore	68	3	10	1	82
Emeryville	18	24	2	8	52
Empire			1		1
Escalon	1				1
Escondido		18	9	4	31
Esparto		1		1	2
Ethanac		1	1		2
Etna Mills	6	3	6	6	21
Eubanks	1				1
Eureka	2	11	12	7	32
Exeter	4	2	84	51	144
Fairfield		5		8	13
Fair Oaks	1	3	2		6
Fallbrook	2	2	1		5
Fall River Mills			1		1
Farallone		1			1
Fellows		1	7	1	9
Ferndale	21	1		1	23
Fertilla				1	1
Firebaugh				4	4
Floriston		3	3	5	11
Folsom			1	2	3
Forestville				3	3
Fort Bidwell	2	2	1	9	14
Fort Bragg	6	5	12	4	27
Fort Jones			7	1	8
Fortuna	2	1			3
Fowler	2	1	7	11	21
French Camp	1	1	2	36	40

Table 7.—Examinations by Towns and Cities—Continued.

	July to December, 1914	January to June, 1915	July to December, 1915	January to June, 1916	Total
French Gulch		1			1
Fresno	31	31	60	73	195
Fruitvale		1	2		3
Fullerton	3	2	3	12	20
Galt	1	1			2
Gardena	52	9	8	15	84
Garvalia		7			7
Gazelle			1		1
Genesee			1		1
Geyer			2		2
Geyersville	3	1	6		10
Giant		1			1
Gilroy		1			1
Glendale	11	43	42	27	123
Glendora	1	6	5	5	17
Goffa		1	1		2
Gonzales	1		9	1	11
Goshen	1				1
Grafton			1		1
Graham			18	1	19
Grasshopper				1	1
Grass Valley	76	88	42	56	262
Greenview			1		1
Greenville	3	5	1	1	10
Gridley	7	12	1	9	29
Grimes	3				3
Gualala				1	1
Guernsey				1	1
Gustine	1	12	2	5	20
Haleyton	1			1	2
Hanford	11	15	63	25	114
Happy Camp				1	1
Harbor Boulevard	1				1
Hardwick		1			1
Hawthorne	9	1	4	4	18
Hayden Hill				2	2
Hayward	37	31	53	28	149
Healdsburg	141	10	128	58	337
Helena			1		1
Hemet	3	7	2	2	14
Hercules			2	4	6
Herald	1				1
Hermosa			1		1
Heroult				3	3
Highbrook			1		1
Highland		4		7	11
Hillman Acres			1		1
Hilt			1		1
Hobart Mills	8	7	4		19
Hollister	5	1	8	6	20
Hollywood		1			1
Holtville		5			5
Homestead			1		1
Hoopa		2			2
Hornbrook			1		1
Horse Lake				1	1
Hot Springs	2				2
Huntington Park	29	2	2	7	40
Hyde Park				1	1
Hynes	1				1
Imperial				1	1
Indian Switching Station	1				1
Indio	2			21	23
Inglewood	8	5	5	3	21
Inyokern			1		1
Ione	7	9	6	6	28
Irvin			1		1

Table 7.—Examinations by Towns and Cities—Continued.

	July to December, 1914	January to June, 1915	July to December, 1915	January to June, 1916	Total
Irvington	10	22	3	3	38
Irwindale	1	1	1	2	5
Isleton			1		1
Jackson	12		1		13
Jamestown	1				1
Jersey Island		1			1
Jess Valley				6	6
Jevoly				1	1
Karlo				33	33
Kellogg			1		1
Kelseyville				1	1
Kennett	2	1	7		10
Kentfield		3			3
Kerman	1	1	1		3
Kernville				2	2
Kingsburg	2	3	2	10	17
La Grange				1	1
Lagunitas		4	4		8
La Habra	1		1		2
Lake City				8	8
Lakeview, Oregon		2			2
Lakeport			2		2
Lakeside		1			1
Lamanda Park			15	4	19
Lanare		1	1		2
Lancaster	3		2		5
Lankershim	54	80	13		147
Larkspur	1		1		2
Laurel Canyon	3				3
Lawndale	1	6			7
Layton		1	3		4
Le Grand		1			1
Lemon Cove			3	3	6
Lemoore	2	1		1	4
Likely			5	7	12
Lincoln		2	3	5	10
Linden			2		2
Lindsay	2	3	22	6	33
Little Lake		1			1
Little Rock			1		1
Little Shasta			1		1
Live Oak	2	9			11
Livermore	16	7	5	2	30
Llano			3		3
Lockeford		1			1
Lodi	10	7	10	8	35
Lometa		2		1	3
Lompoc		1			1
Lone Star				1	1
Long Beach	1		1		2
Loomis		2		1	3
Lordsburg		1	21	3	25
Los Alamos		2			2
Los Angeles	242	237	271	177	927
Los Banos	3	10	20	30	63
Los Gatos	20	13	27	16	76
Los Nietas			1		1
Los Olivos	2	2			4
Loyalton	1		1	4	6
Madeline				7	7
Madera	10	3	5	6	24
Magalla			1		1
Manor			1		1
Manteca	3	3	7	1	14
Mare Island		1			1
Maricopa	3		4	14	21
Mariposa				2	2

Table 7.—Examinations by Towns and Cities—Concluded.

	July to December, 1914	January to June, 1915	July to December, 1915	January to June, 1916	Total
Wrights -----			1	1	2
Yetter -----				1	1
Yosemite -----	4				4
Yountville -----			1		1
Yreka -----	9	4	6	4	23
Yuba City -----	1	2	5	2	10
Yorba Linda -----				1	1
Yucalpa -----				1	1
Zeizah -----	1				1
Totals -----	3,789	6,810	6,365	7,021	23,465

Depositories for Mailing Outfits.

The establishment of depositories at drug stores, which serve without compensation, in towns and small cities of every county in the state has made it possible for health officials and physicians to supply themselves with mailing outfits on short notice. On the recommendation of the local health officer certain drug stores are designated as official depositories and stocked with outfits. Should the physicians of any particular community desire the establishment of a depository, the local health authority should make recommendations to this bureau, which aims to have a sufficiently large system of these depositories so that all physicians can readily procure mailing outfits without charge.

In Table VIII is presented a list of depositories throughout the state which constitute the system of distribution points for all mailing outfits.

TABLE 8.—Depositories for the Mailing Outfits of the Bureau of Communicable Diseases.

County and town	Drug store	County and town	Drug store
Alameda County—		Kings County—	
Alameda.....	Flatow's Drug Store	Corcoran.....	Corcoran Drug Store
Hayward.....	Roger's Pharmacy	Lake County—	
Livermore.....	McKown & Mess	Kelseyville.....	Pond Drug Store
Niles.....	Sneden's Pharmacy	Lakeport.....	Meddaugh's Drug Store
Oakland.....	Philip & Philip	Lower Lake.....	Dr. H. P. Welper
Pleasanton.....	Peter Rock	Middletown.....	Middletown Drug Store
San Leandro.....	O. J. Lynch's Pharmacy	Lassen County -	
Amador County—		Susanville.....	J. B. Spalding
Ione.....	Model Drug Store	Los Angeles County—	
Sutter Creek.....	Morris & Siebe	Alhambra.....	Central Drug Company
Butte County -		Artesia.....	Artesia Pharmacy
Chico.....	Ben Hastings Pharmacy	Azusa.....	Dolley Drug Company
Gridley.....	The Gridley Pharmacy	Bellflower.....	Chas. F. Story's Pharmacy
Colusa County -		Belvidere.....	The Logan Drug Company
Arbuckle.....	Chas. G. Stinson	Burbank.....	Burbank Pharmacy
Colusa.....	Oscar Robinson	Claremont.....	College Drug Store
Maxwell.....	Fouch's Drug Store	Compton.....	Delmar Pharmacy
Williams.....	J. F. Fouch	Covina.....	W. W. Nash
Contra Costa County -		Downey.....	O. W. Heying
Antioch.....	Palace Drug Company	Eagle Rock.....	Eagle Rock Drug Company
Concord.....	C. W. Klein	El Monte.....	El Monte Drug Store
Crockett.....	Crockett Drug Company	Florence.....	Florence Pharmacy
Pinole.....	Pinole Drug Company	Gardena.....	Gardena Pharmacy
Richmond.....	Ferguson's Drug Store	Glendale.....	Glendale Pharmacy
Fresno County—		Glendora.....	Anderson Pharmacy
Clovis.....	Clovis Drug Store	Hawthorne.....	Rankin's Drug Store
Fresno.....	San Joaquin Drug Company	Huntington Park.....	Batcheller's Pharmacy
Kingsburg.....	Reliable Pharmacy	Inglewood.....	Fred J. Fehrensén & Son
Reedley.....	Reedley Drug Company	Lordsburg.....	Kenyon's Pharmacy
Sanger.....	O. A. Brehler	Los Angeles.....	Paschall's Pharmacy
Selma.....	Dusey & Sawrie	Monrovia.....	Thos. Neville
Glenn County—		Norwalk.....	Norwalk Pharmacy
Orland.....	Birch & Company	Ocean Park.....	Moody's Drug Store
Humboldt County -		Pasadena.....	The Modern Pharmacy
Arcata.....	Skinner-Duprey Drug Company	Pomona.....	Campbell & Pierce
Eureka.....	Keller-Bohman's Drug Company	San Dimas.....	San Dimas Drug Company
Fortuna.....	Bowman's Drug Store	San Fernando.....	San Fernando Drug Company
Imperial County—		Venice.....	Lutz Pharmacy
Brawley.....	Fulton's Pharmacy	Whittier.....	Whittier Pharmacy
Calexico.....	Aitken's Pharmacy	Marin County—	
Holtville.....	Holtville Pharmacy	Belvedere.....	Belvedere Pharmacy
Imperial.....	Imperial Pharmacy	Mill Valley.....	Lockwood Pharmacy
Kern County -		San Anselmo.....	Poppy Pharmacy
Bakersfield.....	Baer Brothers	San Rafael.....	Day's Pharmacy
Delano.....	Ramsay's Pharmacy	Sausalito.....	Sausalito Drug Company
East Bakersfield.....	Kern Drug Company	Mendocino County -	
Taft.....	Taft Pharmacy	Fort Bragg.....	Pacific Drug Store
Tehachapi.....	Yerlan Brothers	Mendocino.....	C. O. Packard Drug Store

TABLE 8.—Depositories for the Mailing Outfits of the Bureau of Communicable Diseases—Continued.

County and town	Drug store	County and town	Drug store
Mendocino County—Continued.		Santa Barbara County—	
Ukiah.....	Gibson's Pharmacy	Santa Barbara.....	Sterling Drug Company
Willits.....	Rex Drug Company	Santa Clara County—	
Merced County—		Campbell.....	Orchard City Drug Company
Dos Palos.....	Dos Palos Drug Store	Los Gatos.....	Geo. A. Green's Pharmacy
Los Banos.....	Bertholf Drug Store	Mountain View.....	E. T. Johnson
Merced.....	Merced Drug Company	Palo Alto.....	University Pharmacy
Modoc County—		San Jose.....	Curtis & Henkle Drug Company
Alturas.....	Gibson Drug Company	Santa Clara.....	Madden's Pharmacy
Cedarville.....	Cedarville Drug Company	Santa Cruz County—	
Monterey County—		Santa Cruz.....	Palmer Drug Company
Monterey.....	Palace Drug Company	Watsonville.....	Steinhauser & Eaton
Salinas.....	Krough's Drug Store	Shasta County—	
Napa County—		Redding.....	Powell Pharmacy Company
Napa.....	Arighi & Ballerini	Sierra County—	
St. Helena.....	Smith's Pharmacy	Downieville.....	Downieville Drug Store
Nevada County—		Loyalton.....	Loyalton Drug Company
Nevada City.....	Dickerman Pharmacy	Siskiyou County—	
Orange County—		Dunsmuir.....	Red Cross Drug Store
Anaheim.....	Mullnix Drug Store	Etna Mills.....	W. J. Balfrey
Fullerton.....	Finch's Drug Store	Sisson.....	Mt. Shasta Pharmacy
Orange.....	K. F. Watson Company	Yreka.....	Avery Drug Company
Santa Ana.....	Rowley Drug Company	Solano County—	
Placer County—		Benicia.....	Benicia Pharmacy
Auburn.....	J. G. McLaughlin	Dixon.....	California Drug Store
Colfax.....	J. L. Butler & Son	Rio Vista.....	Rio Vista Pharmacy
Dutch Flat.....	Dr. J. H. Johnston	Suisun.....	Criterion Drug Store
Lincoln.....	Ingram's Drug Store	Vacaville.....	Vacaville Drug Company
Loomis.....	Loomis Pharmacy	Vallejo.....	Vallejo Drug Company
Plumas County—		Sonoma County—	
Quincy.....	Quincy Drug Store	Heldsburg.....	Rathke's Pharmacy
Riverside County—		Petaluma.....	Young-Herold Drug Company
Banning.....	Banning Drug Store	Stanislaus County—	
Beaumont.....	Robert Fulton	Ceres.....	Ceres Drug Company
Corona.....	R. F. Billings Estate	Modesto.....	Maze Drug Store
Elsinore.....	Wright Drug Company	Newman.....	Pioneer Drug Store
Hemet.....	Wedemeyer's Pharmacy	Oakdale.....	Endicott's Drug Store
Perris.....	Perris Pharmacy	Turlock.....	Turlock Drug Company
Riverside.....	F. A. Gardner & Company	Tehama County -	
Sacramento County—		Corning.....	Thompson's Drug Store
Elk Grove.....	"Ye Medicine Shop"	Red Bluff.....	Elmore Pharmacy
Folsom.....	S. H. & F. P. Burnham	Trinity County -	
San Bernardino County—		Weaverville.....	D. B. Fields, M.D.
Chino.....	Reher's Pharmacy	Tulare County—	
Colton.....	Colton Pharmacy	Dinuba.....	McCracken's Pharmacy
Needles.....	Needles Drug and Jewelry Company	Exeter.....	Mixter Pharmacy
Redlands.....	Mont P. Chubb Drug Company	Lindsay.....	Lindsay Drug Company
San Bernardino.....	Owl Drug Store	Orosi.....	H. L. Huntington
San Diego County—		Porterville.....	Claubes Pharmacy
Chula Vista.....	Wigginton's Pharmacy	Tulare.....	E. Allen Test
Coronado.....	Central Drug Store	Visalia.....	J. M. Boynton
East San Diego.....	Parkin Drug Company	Woodlake.....	Woodlake Drug Company
Esccondido.....	Rolfes Drug Company	Tuolumne County—	
La Mesa.....	La Mesa Drug Store	Sonora.....	Union Drug Store
National City.....	Keller's Drug Store	Tuolumne.....	Bigelow's Drug Store
Oceanside.....	Exton & Nichols	Ventura County—	
Ramona.....	Thos. Jerman	Nordhoff.....	Ojal Drug Store
San Diego.....	Ferris & Ferris	Santa Paula.....	Cauch's Drug Store
San Joaquin County—		Ventura.....	Pioneer Drug Store
Stockton.....	Eagle Drug Store	Yolo County—	
San Luis Obispo County—		Davis.....	Campbell's Pharmacy
Arroyo Grande.....	W. A. Conrad, Jr.	Winters.....	Day's Drug Store
Cambria.....	Peoples Drug Store	Woodland.....	John V. Leithold
Paso Robles.....	W. C. Bennett	Yuba County—	
San Luis Obispo.....	Peoples Pharmacy	Marysville.....	Rubel's Drug Store
San Mateo County—		Wheatland.....	Wheatland Pharmacy
South San Francisco.....	Peninsula Drug Co.		

Branch Laboratories.

For the convenience of the practicing physician and in order that the reporting of specimens may be expedited, the State Board of Health maintains in connection with the main laboratory of the Bureau of Communicable Diseases, located at Berkeley, three branch laboratories. At these branches, suspected specimens are examined: swabs for diphtheria bacilli, sputum for tubercle bacilli, blood for the Widal reaction, pus for gonococcus, blood smears for malaria parasites. The Pasteur treatment is administered also at these branches.

*Northern California Branch,
406 Inverness Building,
Sacramento, California.*

This branch was in charge of Dr. J. R. Snyder, who has been given a leave of absence for military service on the Mexican border. During the absence of Dr. Snyder, his assistant, Mrs. Lucelle Ramsey, is in temporary charge, under the supervision of Dr. F. F. Gundrum, vice president of the Board. The work of this branch includes the diagnosis of specimens from the following counties:

Alpine	Modoc	Sierra
Amador	Mono	Siskiyou
Butte	Nevada	Sutter
Calaveras	Placer	Tehama
Colusa	Sacramento	Trinity
El Dorado	San Joaquin	Yolo
Glenn	Shasta	Yuba
Lassen		

This branch examined a total of 2,276 specimens. These were divided according to disease and number as follows:

Diphtheria	1,353, positive	229
Gonococcus	5, positive	0
Malaria	126, positive	27
Tuberculosis	353, positive	75
Typhoid	439, positive	120
Miscellaneous	1, positive	1

*San Joaquin Valley Branch, Fresno,
710 Griffith-McKenzie Building.*

Dr. W. W. Cross is in charge of this branch which serves the following counties:

Fresno	Madera	Stanislaus
Kern	Mariposa	Tulare
Kings	Merced	Tuolumne

During the biennial period a total of 1901 specimens were examined:

Diphtheria	1,491, positive	371
Gonococcus	11, positive	1
Hookworm	2, positive	0
Malaria	32, positive	3
Tuberculosis	164, positive	36
Typhoid	191, positive	5
Miscellaneous	10, positive	4

*Southern California Branch, Los Angeles,
1209 Brockman Building.*

Dr. Walter V. Brem is in charge of the southern branch. This branch carries on diagnostic work for the following counties:

Imperial	Orange	San Diego
Inyo	Riverside	Santa Barbara
Los Angeles	San Bernardino	

There were, during the biennial period, 4,565 specimens examined. These were divided as follows:

Diphtheria	3,834, positive	889
Gonococcus	45, positive	4
Malaria	17, positive	2
Rabies	3, positive	3
Tuberculosis	267, positive	87
Typhoid	397, positive	23
Miscellaneous	2, positive	1

Main Laboratory.

The field investigations of the Bureau of Communicable Diseases and the preparation of vaccines are the work of the main laboratory situated in the Hygiene and Pathology Building, on the campus of the University of California. In addition to this, the main laboratory serves the following counties for diagnostic work:

Alameda	Marin	San Mateo
Contra Costa	Mendocino	Santa Clara
Del Norte	Monterey	Santa Cruz
Humboldt	Napa	San Luis Obispo
Lake	San Benito	Solano

The Staff.

The staff of the Bureau of Communicable Diseases is as follows:

Director.

James G. Cumming, M.D., M.S.P.H., Dr.P.H.

Epidemiologists.

J. C. Geiger, M.D., M.Ph., Assistant Director.

Frank L. Kelly, M.D., M.S.

Consulting Parasitologist.

Wm. B. Herms, M.S.

Bacteriologists.

Violet M. Bathgate, M.S.

Grace A. Macmillan.

Walter V. Brem, M.D., in charge of the southern branch, Los Angeles.

W. W. Cross, M.D., in charge of the San Joaquin Valley Branch, Fresno.

J. R. Snyder, M.D., in charge of the northern branch, Sacramento.

Clerical Force.

Florence B. Shackelford.

Mary G. Beck.

Laboratory Helpers.

P. E. Rudolph.

R. V. Lee.

Research Work and Public Health Instruction.

In addition to the work listed above, research work is carried on in connection with field investigations; correspondence relative to public health matters is carried on in reply to letters of inquiry; papers are given before various audiences in addition to class lectures in hygiene and preventive medicine at the Medical School of the University of California.

REPORT OF THE CONSULTING PARASITOLOGIST.

By WILLIAM B. HERMS, M.S.

No doubt the most important assistance which the Consulting Parasitologist has to render the State Board of Health is that which relates to malaria and its control, primarily through mosquito abatement. This feature of the work is followed closely in importance by anti-housefly propaganda. In addition there is frequent demand for the identification of various animal parasites coming through the channels of the State Hygienic Laboratory.

The former designation of this office, namely "Officer in charge of Malaria Investigations" implies in the change to the present title merely an expansion of duties with at least the original stress on malaria investigations. The office involves both field work and lectures, technical and popular, also preparation of bulletins and shorter papers, certain laboratory routine and frequent consultations with officers of the State Board of Health—all of which is rendered without cost to the State Board of Health because of the spirit of hearty cooperation as manifested by the University of California in many matters of state concern.

Mosquito Investigations.

The first effort on the part of the University of California to assist in the abatement of a mosquito nuisance was made in Marin County in the vicinity of San Rafael at the request of Mrs. George T. Page of



Searching for anopheles mosquito larvæ in a typical breeding place during the state-wide mosquito and malaria survey of the California State Board of Health.

the San Rafael Improvement Club. This request is dated April 5, 1903. An investigation was made by Professor C. W. Woodworth and assistants with the result that oil was applied according to recommendation to certain salt marsh areas responsible for the trouble. This was followed by the employment of Mr. A. L. Ashman during the spring and summer of 1904 for the purpose of mosquito abatement.

In March, 1904, the Burlingame (San Mateo County) Improvement Club invited Professor Woodworth to make a similar investigation of the mosquito problem in the vicinity of Burlingame. Professor H. J. Quayle was detailed to organize and conduct the campaign. Here again the main trouble was traceable to the neighboring salt marshes. During the spring and summer of 1905 Professor Quayle, assisted by students from the University of California, waged a systematic anti-mosquito campaign with marked success. This campaign is described in Bulletin No. 178, University of California Agricultural Experiment Station. Considerable permanent corrective work was undertaken together with a systematic study of the mosquitoes of that vicinity. During the mosquito seasons of 1911 and 1912 a salt marsh mosquito campaign was conducted by the writer with the help of students in the vicinity of Bay Point in Contra Costa County under the patronage of the Smith Lumber Company.

The writer first became definitely identified with the mosquito problems of California in December, 1909, when he received a letter from Mr. F. E. Morgan of Penryn, Placer County, requesting that an investigation be made of the malaria-mosquito situation in that vicinity. This investigation resulted in organizing a systematic campaign against mosquitoes during the spring and summer of 1910, terminating in a marked reduction of malaria particularly in school children. The success of the work was largely due to Mr. H. E. Butler, chairman of the executive committee. This campaign deserves the distinction of being the first organized anti-malaria crusade in the state. The campaign in Penryn had hardly begun when citizens of Oroville, Butte County requested that a similar campaign be organized there. These two campaigns are discussed in detail in the writer's book on "Malaria—cause and control."

The movement spread rapidly, so that within the next two years active crusades against malaria-bearing mosquitoes had been organized in a number of localities, from Bakersfield in Kern County to Los Molinos in Tehama County. One of the chief obstacles from the very beginning was the matter of securing adequate funds to carry out an efficient crusade. The expenses thus far have been largely borne by a relatively few public spirited citizens. Hence very early in the work a plan was sought whereby funds might be secured on a more equitable basis, with the result that after several failures, an act of the legislature was approved by the Governor on May 29, 1915, known as the "Mosquito Abatement District Act."

Mosquito Abatement Districts.

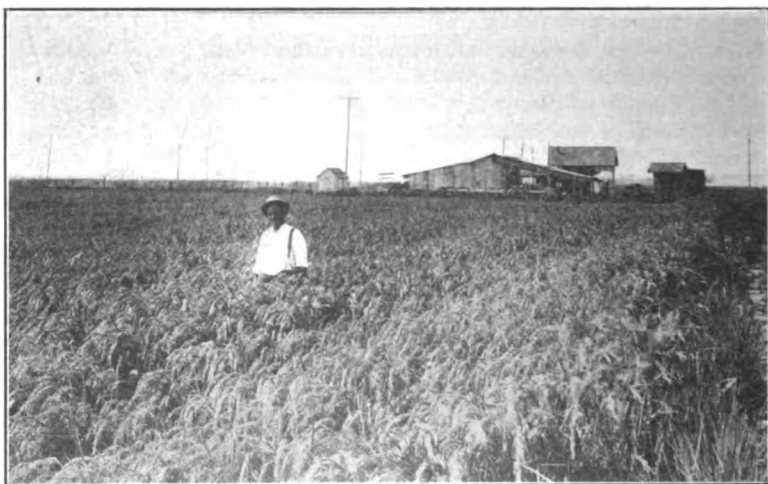
This act provides for the formation, government, operation and dissolution of such districts, to facilitate the extermination of mosquitoes, flies and other insects; and to provide for the assessment, levy, collection and disbursement of taxes therein. It provides that such tax must not be greater than sufficient to raise the amount estimated by the board of trustees of the district, appointed by the county supervisors, and must not be in excess of ten cents on each one hundred dollars of taxable property in such district.

The first district to be organized under the new law was the San Mateo District, in ———, 19—, the second being Marin County District No. 1, both involving salt marsh areas. These two districts are now in

charge of Mr. N. M. Stover, a graduate of the University of California. A third salt marsh district has been organized in San Mateo County, known as the Pulgas District. The first district to be organized involving fresh water mosquitoes of the malaria bearing type was at Bakersfield—the Morris District. Oroville has a well organized district, while Riverside and Woodland have districts now in process of formation.

The act makes it possible to include both incorporated and unincorporated territory or portions of both in the same district, thus protecting communities which often draw their supply of mosquitoes very largely from the outskirts, which may be outside the corporate limits.

It is of vital importance that the direction of the work be placed in the hands of men who are scientifically equipped in the matter of mosquito control. The mere application of oil to a pond in a haphazard way



A field of growing rice. Since the conditions in this field make it an ideal breeding place for mosquitoes, persons living in the dwelling house shown in the picture are in danger of contracting malaria. The formation of mosquito abatement districts helps to solve the problems connected with the breeding of mosquitoes in the rice fields.

will not abate the mosquito nuisance. Permanent corrective measures must be applied with a minimum expenditure for oil and other temporary agencies.

With the recent rapid development of the rice industry in California there is injected another important factor in the public health problem of the state. Rice culture is most successful in parts of California where also the *Anopheles* mosquito thrives best. The growing of rice demands that the entire acreage under cultivation be flooded with water, from approximately June first to October fifteenth. This water with the attendant pools resulting from seepage, faulty construction and carelessness, breeds myriads of mosquitoes which are unfortunately very largely *Anopheles*.

Careful investigation of the mosquito-malaria problem in the vicinity of the rice fields will be carried on during the mosquito-malaria survey under way this summer. It seems quite probable that much of the

trouble will be remedied as the culture of rice in the state is placed on a more scientific basis.

The control of mosquitoes and the eventual control of malaria is a matter of intensive, persistent effort; but few activities will bring greater returns in health, happiness and efficiency. A wide distribution of Special Bulletin No. 9 is strongly urged.

The Mosquito-Malaria Survey.

A notable advance has been made in the control of malaria in the state, in that the State Board of Health has authorized a malaria-mosquito survey, this to be done in cooperation with the University of California under the direction of the writer assisted by Mr. Stanley B. Freeborn, Instructor in Entomology, who was made "Inspector" for this purpose. It was estimated that the expense of the survey would approximate \$2,150 for the first summer including cost of automobile, maintenance, hotel expenses and general equipment, there being no charge made to the State Board for the services of either the writer or Mr. Freeborn.

The equipment consisted of maps of various kinds, collecting outfit and mosquito receptacles, microscope, stain, camera, etc. A five-passenger touring car was selected for the work. The survey began May 10th and it is expected that a careful study of the northern portion of the state will be completed by the 10th of August.

The object of the survey is threefold: first, *scientific* in that an accurate knowledge of the specific occurrence and distribution of mosquitoes and malaria is desired; second, *economic* and *remedial* in that accurate information relative to the breeding places of Anopheline mosquitoes is required in order that definite and practical suggestions for control can be offered; and third, *educational*, in so far as literature is being distributed, lectures are given, conferences are held and much personal work done among the ranchers.

It is expected that a complete report of the survey will be published on completion of the work. No doubt the reporting of malaria on the part of physicians will be stimulated, and there will also certainly be a marked increase in the number of mosquito abatement districts as the result of this work.

Anti-Housefly Propaganda.

There are very few communities in the state which the writer has not reached either directly or indirectly with his anti-housefly propaganda, with the result that many communities have during the past six or seven years undertaken work along this line. In many instances the housefly crusade has been an important part of the general clean-up campaign. Indeed the writer has repeatedly said that a community which does not include flies and mosquitoes in its clean-up program is working on a 50 per cent efficiency basis.

While every legitimate effort to control the housefly deserves more or less commendation, the writer believes that altogether too much emphasis is placed on fly traps. To breed flies in the back yard and catch them in front of meat shops, restaurants, grocery stores, etc., which are usually visited en route, is not good public health practice. Flies are primarily food contaminators and this is usually accomplished before they are captured. The sanitary disposal of manure with reference to

fly breeding, and the proper storage and disposal of household waste, meatshop offal, garbage, etc. needs far more emphasis. That flies can be controlled has been amply proved in all communities and on all ranches where scientific care relative to the foregoing matters has been practiced.

No doubt the wide distribution of Special Bulletin No. 9 will bring further results in this direction.

Laboratory Examinations.

The growing demand on the part of physicians for accurate laboratory diagnosis is the chief cause for the steady increase of specimens received for proper determination. Thus insects of many kinds are received with letters requesting information relative to their venomous properties or parasitic habits. Specimens of feces, vomit, and blood are received with requests to determine probable parasitic infection, also portions of tapeworms, other parasitic worms, etc., with request for identification.

Exhibits and Lectures.

Several exhibits have been worked up recently relating to "Flies," "Mosquitoes and Malaria," "Animal Parasites Affecting the Public Health," etc. These exhibits have been used at the State Fair, the Health Officer's Conference, and for other purposes.

A comprehensive series of lantern slides has been accumulated, practically all of which are made from photographs taken under the direction of the writer. These slides are being widely used by the writer and associates in lectures relating to "Rural Public Health," "Flies and their Control," "Mosquitoes and Malaria," "Mosquito Control," "Animal Parasites and the Public Health," etc.

It is recommended that duplicates be made of many of the slides so as to allow a wider use of the same. With the advent of the moving picture in the field of public health it is further urged that a series of moving pictures be added to the working material of this office. Several of these might be appropriately worked up in the form of scenarios.

REPORT OF THE BUREAU OF SANITARY ENGINEERING

By C. G. GILLESPIE, Director.

The Bureau of Sanitary Engineering was created by an enactment of the 1915 legislature, approved May 24, 1915, effective August 8, 1915, as follows:

"The state board of health shall maintain a department of sanitary engineering which shall have charge of such matters and shall have such powers as may from time to time be delegated to it by the state board of health. The board shall appoint a director of the department, who shall be a graduate sanitary engineer, whose salary shall be four thousand dollars per annum. The state board of health may employ and fix the compensation of other additional professional and clerical assistants and such compensation shall be paid from the funds provided for the maintenance of the department of sanitary engineering. The sum of thirty thousand dollars is hereby appropriated for the purpose of this act. Claims against the fund shall be audited by the state board of health and by the board of control and shall be paid by the state treasurer upon warrants drawn by the state controller."

This, the first biennial report of the bureau, for the period ending June 30, 1916, limited to the period of its existence beginning August 8, 1915, will comprise a more detailed history of its purpose and mode of activity than will probably be found necessary in subsequent reports. Vital policies have been determined probably applicable many years into the future, and in certain lines need is felt for legislation to make the work of the bureau more quickly effective. In particular this report will relate to a summary of the work accomplished and to those numerous problems which have presented themselves only to be untouched for lack of opportunity and facilities.

The broad aim of the bureau is to aid or compel the providing of safe and satisfactory water supplies for communities, individuals and the industries, the preventing of pollution and fouling of streams, wells and water supplies, and the providing of sewage and garbage disposal for communities, individuals and the industries which will be inoffensive, protective of health, and economical; in other words, to promote health conservation and the fuller enjoyment of life through the special field of sanitary engineering. Focus has been directed chiefly on those matters related most closely to the promotion of health and these principally where the largest population would be benefited. It must be apparent, therefore, that even before work could be properly undertaken a state-wide sanitary survey was necessary to determine where the most fruitful fields for endeavor lay and how such policies and standards as were of necessity adopted in individual cases at the outset would apply to the state in general. This survey work has been conducted with or in advance of the presentation of problems in given localities and has covered approximately one-fourth of the state. It is imperative that the area be quickly extended, not only to afford the proper viewpoint broader than any local one so necessary to the public

interest, but to put an early stop to stream, lake and bay pollution before the custom becomes established. It would be a calamity if this state, naturally a vacation land, should allow its waterways and pleasure grounds to fall into the same category in regard to filth with many of those in the industrial East.

A very creditable amount of specific service has also been rendered in the nine months working period, as may be indicated by the following summary and the amplification at the close of this report.

Sewage Disposal.

Permits granted	26
Inspections	108
Reports to the community	79
Reinspections	17
Plans reviewed	12
Tests of sewage treatment plants	5
Stream pollution surveys	8

Water Supplies.

Permits granted	9
Inspections	62
Reports to the community	40
Reinspections	17

Special Investigations.

Shellfish bed pollution	3
Sanitary surveys	1

Distribution of the above work by communities is as follows:

Alhambra	Hayward	Rio Vista
Alviso	Healdsburg	Riverdale
Anaheim	Hemet	Riverside
Antioch	Hermosa Beach	Rocklin
Arroyo Grande	Holtville	Sacramento
Auburn	Imperial	San Bernardino
Benicia	Indio	San Bruno (Belle Air
Beverly Hills	Isleton	Addition)
Brawley	Kennett	San Diego
Calxico	King City	San Fernando
Calistoga	Keswick	San Jacinto
Calwa (Santa Fe shops)	Lompoc	San Jose
Carpinteria	Long Beach	San Luis Obispo
Castella	Loomis	San Miguel
Chico	Los Angeles	Sanger
Chino	Los Banos	Santa Barbara
Cloverdale	Los Gatos	Santa Clara
Colfax	Los Gatos (Oak	Santa Maria
College Park	Sanatorium)	Santa Monica
Colma	Madera	Santa Paula
Colton	Marysville	Santa Rosa
Compton	Mendocino State Hospital	Sausalito
Coronado	Menlo Park	Sebastopol
Davis	Mill Valley	Sonoma
Dunsmuir	Moraga	Sonoma State Home
Eagle Rock (Strickland	Muir Woods	South Pasadena
Home for Boys)	Napa	St. Helena
El Centro	National City	Stockton
Escondido	Newcastle	Tahoe
Eureka	Oceanside	Truckee
Firebaugh	Ontario	Ukiah
Folsom	Orange	Universal City
Folsom Prison	Pasadena	Vacaville
Fowler	Paso Robles	Venice
Fresno	Pittsburg	Walnut Creek
Fullerton	Pomona	Walnut Grove (Alex. P.
Grass Valley	Redding	Brown)
Gridley	Redlands	Whittier
Guerneville	Redondo Beach	Willows
Hanford	Reedley	Winters

In the laboratory the bureau has analyzed water and sewage for sanitary purposes as follows:

Water.	
Bacteriological examinations -----	1,085
of which 59.2 per cent showed sewage contamination.	
Partial chemical examinations -----	1,074
Complete chemical examinations -----	4
Sanitary chemical examinations -----	3
Microscopic examinations -----	5
Sewage.	
Bacteriological examinations -----	23
Sanitary chemical examination -----	22
Special.	
Clams, oysters, etc -----	8

Twenty-one communities now have their supplies examined regularly by the laboratory, listed as follows:

Antioch	Escondido	Los Banos
Auburn	Eureka	Merced
Benicia	Firebaugh	Redding
Calexico	Fortuna	Redlands
Calistoga	Kennett	Rocklin
Eagle Rock	Livermore	Ukiah
El Centro	Loomis	Ventura

About four thousand letters have been written in the past ten months of which fully 30 per cent have been in response to requests for miscellaneous sanitary advice.

In addition, two papers were prepared for presentation at the Municipalities Convention at Oakland, October, 1915, as follows: "Classification of Streams from the Standpoint of Sewage Pollution" and "Status of Sewage Disposal in California."

Three pamphlets have been issued entitled: "Sewage Disposal for Isolated Residences," "Sanitation in the Mountains" and "Disposal of Sewage in Rural School Districts."

Organization.

A staff as follows has been gradually assembled, with quarters consisting of an office and sanitary laboratory on the campus of the University of California at Berkeley, where advantage is taken of the work of the University in allied lines:

Director, Mr. C. G. Gillespie. University of California, B.S., Department of Civil Engineering, 1907; operator-in-charge experimental filtration plant of the Peoples Water Company, Oakland, Cal., 1907-8; field work, U. S. Irrigation and Drainage Investigations, 1908; assistant engineer, office of C. G. Hyde, private work and for University of California, 1909-11; assistant Minneapolis Filter Plant Construction, 1911-12; assistant engineer, San Francisco Water Supply, 1912; special engineer, California State Board of Health, 1912-13; assistant engineer, office of Geo. W. Fuller, consulting sanitary engineer, New York, 1913-15; assistant engineer, Sacramento, Cal., 1915.

Assistant Engineer, Mr. Ralph Hilscher. Beloit College, Wisconsin, B.S., 1908; Massachusetts Institute of Technology, 1909-10; engineering assistant, Massachusetts State Board of Health, 1910-11; assistant engineer, Illinois State Water Survey, 1911-15; acting chief engineer, Illinois State Water Survey, 1915.

Chemist and Bacteriologist, Mr. Frank Bachmann; Rensselaer Polytechnic Institute, 1905-7; University of Illinois, 1907-10, B.S. in Chemistry; assistant chemist and bacteriologist, Illinois State Water Survey, 1907-10; assistant chemist and bacteriologist, Sanitary District of Chicago, 1910-15.

Sanitary Engineering Assistant, Mr. Joseph Doman; University of California, B.S., Department of Civil Engineering, 1914; draughtsman, Whitehall Estates Irrigation Project, 1914-15; in charge U. S. Drainage experiments near Fresno, 1915; miscellaneous sanitary work with University of California, 1916.

Clerk, Miss A. M. Tridel.

Laboratory Helper, Cornelius Herb.

By November the laboratory and engineering work were well under way. For its working mechanism the bureau has practically transplanted that built up by similar bureaus in Eastern states held as most advanced in health conservation. The bureau was fortunate in securing for its technical staff assistants having had long connection with health matters in Massachusetts and Illinois.

Classification of Work.

Most of the work of the bureau at present undertaken may be embraced under the following heads, classified from the standpoint of mode of activity:

1. Administration of the state laws on water pollution and sanitary supplies.
2. Field work.
 - (a) Original inspections, investigations, reports for improvement of sewage disposal and water supplies, prevention of stream pollution and abatement of sanitary nuisances, either as a result of complaints filed or on the initiative of the bureau itself.
 - (b) Reinspection to compel compliance with requirements of the bureau as laid down above.
 - (c) Field tests of sanitary engineering works, *e. g.*, sewage disposal and water purification plants.
3. Approval and review of plans for water purification and sewage treatment.
4. Educational.
5. Advice, largely by correspondence, on rural sewage disposal, water supply, summer resort sanitation, disposal of industrial wastes, swimming pool sanitation and miscellaneous sanitary engineering inquiries.
6. Laboratory work on sanitary quality of water supplies, studies of stream pollution and operation of sewage disposal plants.

1. ADMINISTRATION OF THE STATE LAWS ON WATER POLLUTION AND SANITARY WATER SYSTEMS.

The Statutes of 1913, amended 1915, make it unlawful for any public body to supply water which is polluted or dangerous to health and also require all public bodies supplying water for domestic use to apply for and hold a written permit for that purpose from the State Board of Health. Supplies furnished to less than two hundred connections are exempt from this provision, however, unless complaint is lodged with the State Board of Health by a user or some public officer. The board may deny the petition for permit if the supply is dangerous or unhealthful and, in the case of existing works, may lay down conditions on which the use of the supply may be continued. It is to be noted that *healthfulness* and not *purity*, i. e. freedom from all objectionable qualities, determine whether the supply is entitled to a permit.

The statutes on sewage disposal and contamination of streams adopted in 1907 and amended in 1911 and 1913, make it unlawful for any animal or vegetable matter or substance offensive, injurious or dangerous to health to be discharged into waters, surface or subterranean, used or intended to be used for human or animal consumption, or onto land adjoining such waters which may drain into them. It is also unlawful to construct camps, tents, temporary houses, privies, cesspools or sewer pipes for the carrying of "impure water, gas, vapors, oils, acids, tar or other matter or substance offensive, injurious or dangerous to health," whereby any of such substance draining therefrom shall empty, flow, seep, drain, condense or otherwise pollute or affect any of such waters so intended for human or animal consumption or for domestic purposes. All persons and public bodies desiring to dispose of sewage, etc., in such a way that waters are apt to be affected thereby, are required to hold a permit for that purpose from the State Board of Health. The permit is to be granted if no water pollution is evident or, in the case of existing works, conditions may be imposed under which the practice may be continued temporarily. In all cases permits are granted or refused only after personal investigation and study of all angles of the local situation by a member of the bureau. Thirty-five such actions have already been taken, involving a more or less exhaustive study of the problem, followed by report to the State Board of Health and the obtaining of much needed improvements in most cases before action has been recommended.

Failure to hold a permit leaves the person or public body open to injunction. How serious a weapon injunction will prove to be has not yet been determined for the reason that the board has not had time for such prosecutions and has avoided the necessity. Probably the greatest weakness and one demanding amendment to the laws is the limitation of permit requirement purely to sanitary considerations. It is not sufficient that water supplies should be free of sewage pollution; as delivered they should also be free of turbidity, algae, tastes, odors, high color and hardness. They should meet the practical definition of "pure" water. Likewise, sewage disposal should not only be free of possibilities of water pollution but should be as devoid of nuisance production as is practicable. Responsibility for the above results should always remain locally, but the State Board of Health

alone should stipulate the results and be empowered to see to it that these results are quickly delivered. As a constructive body it should suggest the means to the end to be adopted, but it should studiously leave the responsibility for obtaining the results required with those in charge.

Such censorship by a body of experts in a position gradually to accumulate the greatest fund of working data and correct practice, including as it does approval of plans for sanitary structures, automatically brings the work of so-called sanitary engineers under a much-needed supervision and will result in unquestioned benefit, not only to the party or community paying for the work, but to the public at large and to reputable sanitary engineers who can thus draw on the bureau as a sort of clearing house for sanitary engineering statistics and practices.

It is not sufficient, however, that designs should be correct. Construction should not depart from or miscarry the design. The bureau should be able to occasionally inspect construction for this purpose. Furthermore, without operation any plant is bound to be a failure. There are several thoroughly good plants in this state which are to all appearances failures, solely because of insufficient and unintelligent attendance. And what is more, there are no indications that the situation will improve until pressure is brought to bear from without in the guise of damage suits or of mandatory powers given to the State Board of Health similar to those held by the State Board of Health of Maryland, whereby operators can be removed or appointed at the discretion of that body.

Policy on Admissible Stream Pollution. No larger question presented itself at the outset than what should be the attitude toward sewerage into streams. The line of least resistance and the practice in the East indicated that no bar should be placed on continuation of the use of streams for sewage disposal. Conditions in the East, however, differ much from those in California. The East is industrial, a large portion of California is a vast playground. In a majority of the Eastern streams contamination has reached a point where the very appearance of the stream forbids its use for drinking purposes and every sane individual is held to be aware of the risks therein. Sewage discharge is curbed, therefore, only sufficient to maintain the supply redeemable for domestic use by water treatment, and surely to prevent nuisances. The burden of responsibility for pure water thus rests on the user, usually a larger or smaller community. Such a policy, though not conserving the public health to the maximum extent, is dictated by the economic consideration that the extreme sewage treatment necessary to keep the streams safe in the raw state would be tremendously more expensive than purification of that portion of the stream used for domestic purposes. Even now, however, there is a notable movement, yet filled with difficulties, at redemption of many Eastern streams which have received wastes for decades. In the West, congestion of population is still uncomparable to that of the East, and great industries have not as yet sprung up along our streams, contributing their quota of offensive wastes. On the average, therefore, California streams are in a much higher state of purity than those of the East,

and from appearance are popularly accepted as fit sources of drinking water. Whether this feeling of safety is false or not matters little as long as the practice continues of promiscuous use of the streams for random or constant drinking water supplies with inadequate or haphazard treatment, if any. In most cases there is no treatment. The mere fact that the public does not as yet appreciate the possibility of risk in so many of our potable streams susceptible to pollution, makes it imperative that the public individually and collectively, be protected in its false sense of security, at least until such time as the true danger is universally realized. The attitude of this board, therefore, has been to discourage relentlessly direct discharge of sewage into streams and at the same time to begin inculcating in the minds of the public a fear of surface supplies in the crude state.

In excluding sewage from streams it has usually been easy to develop an alternative disposal of sewage by irrigation on land or, in the case of small volumes of sewage, by subsurface irrigation through tiles, cesspools receiving clarified sewage, or some other device for accomplishing seepage through soil. Such methods are seldom a hardship financially or otherwise and no particular difficulty has been encountered in their adoption. Any more extensive works which would involve a great outlay would hardly meet with cheerful approbation at this time. The public generally in this state is not yet educated to high-grade sanitary engineering projects. The field is yet in the pioneer stage. Refinements and heavy outlays are impossible. As witness to the long painful throes some of the most noteworthy projects must pass through before reaching consummation, is the filtration of the Sacramento Water Supply. Nowhere is filtration more appropriate, yet for ten years an opposition sustained by its fear of results, cost, chemicals, or what not, has defeated efforts at raising the necessary funds. In this state, therefore, it has seemed wise to the bureau to first utilize to the fullest reasonable extent those appropriate facilities nearest at hand, leaving the necessity for elaborate works to be later proved to the public's satisfaction. There results a gradual moral preparation for higher grade methods in the future which makes for greater appreciation of constructive efforts. With the stimulus of a board backed by ample mandatory powers, however, there is bound to be a rapid improvement as thought is caused to focus on the need therefor.

That sewage irrigation, the usual disposal method of the present, can not remain satisfactory for all time in this state is, however, a foregone conclusion. Unless carefully manipulated, a sewer farm is an intense source of complaint. That same congestion of population and development of manufacturing which determined the sewage disposal policy of the East is finally bound to render the ordinary sewage farming impossible or unattractive here. It has already done so in several instances. Communities must then secure a more refined and superior effluent which can be utilized on land as irrigation water without offense, or returned to the nearest stream in a state which will not lessen its purity. One method of disposal or the other will pertain to all the inland communities. Irrigation with sewage will remain more attractive in arid sections where irrigating water is scanty than elsewhere in the

country. Just what degree of prior treatment will be essential in any particular case, whatever the disposal, can not be anticipated at this time. It will be different in most every instance and sewerage community. For disposal by dilution, a logical principle to adopt in determining the degree of prior treatment might be the German one, applied to its already polluted streams, that a sewage effluent shall be no worse than the stream into which it discharges. The question of proper restrictions to be imposed is bound to be a profound one, requiring ample data and analysis and clear judgment. Especially should the bureau begin at this time, and in advance of the actual presentation of the matter for decision, the collection of pertinent information by itself and the various communities.

Cooperative Agreements with Other Bodies. There are several other state commissions whose work is more or less related to that of this bureau and with whom, therefore, there is considerable opportunity for concerted effort. Much has been done in the past year to develop this mutual cooperation. The Bureau of Immigration and Housing, through its inspectors, is continually uncovering violations of the stream pollution laws in out-of-the-way places, which are immediately reported to this bureau. The State Railroad Commission, in considering satisfactory service by the water companies coming within its jurisdiction, not infrequently faces the question of water purity. In cooperating with the State Board of Health, the commission now makes its fixing of rates contingent on the requirements of the bureau for new or modified works. The commission also requires that water companies shall hold a water permit from the State Board of Health before the case will even be considered. The Fish and Game Commission, through their deputies, will also cooperate by placing placards along dangerous streams and warning the sporting public against stream pollution. In addition, the most valuable cooperation has been arranged between the United States Forest Service and the State Board of Health limited to the National Forests. Since most of the camping grounds of the state are within the forests, no small amount of benefit results.

2. FIELD WORK.

The engineering staff spends approximately 30 per cent of its time in the field, visiting water supplies and sewage disposal plants, either on its own accord or in response to complaints or requests. Whenever possible, stream pollution studies are made in an effort to find out if the stream is dangerous, the sources of any pollution and the feasibility of abating them. All applications for permits as discussed under (1) also involve special investigations as a basis for action upon them. In practically all cases more or less elaborate reports are prepared describing the pertinent features, recommending the improvements the case warrants, and passing judgment on a contemplated project. On the soundness of the advice and recommendations so rendered rests the reputation of the bureau for real service. More and more time and thoroughness will have to be devoted to the problems as the more complex ones come under consideration, and the number of investigations are correspondingly decreased to a point where superficiality will be avoided.

Largely on the sponsoring, recommendations or insistence of the bureau approximately twenty chlorinating plants for water sterilization have been installed in the past year and a score of others are in contemplation. Improvements to filter plants were made in two instances and minor improvements to settling basins in several others. Many simple, inexpensive improvements can be suggested to the local officials, showing plainly the need of expert advice on sanitary works, their design and operation.

Recommendations in sewage disposal works operation and rectification in disposal have been made in a score of instances. In a quite satisfactory way, most of the recommendations have been carried out. Three installations of high grade treatment works and six Imhoff tanks for preliminary sewage treatment are now under construction on the advice of the bureau, representing a considerably greater activity in improved sewage treatment than in any previous year in California and measuring in a way the activity of the bureau.

3. APPROVAL AND REVIEW OF PLANS.

Plans and specifications are required to accompany all applications for permit for new work, at the discretion of the bureau. Plans are reviewed with the view of forestalling improper or needlessly expensive installations and of determining whether the project can meet proper sanitary requirements with the greatest ease and certainty. The bureau acts solely in review on such plans and does not attempt to perform the functions of consulting engineer.

The review of plans applied in so mandatory a way that no sanitary works, either new or additions or modifications to existing structures, can be undertaken or contracted for without approval of the State Board of Health offers the most definite regulation of the kind of work which shall henceforth be installed, and should be made certain by proper amendment of the statutes at the next session of the legislature. Approval of plans for sanitary water systems should be contingent only on the ability of the works to deliver a "pure" water, and all this in an economical and certain manner. The word "pure" applied to water has been defined in the courts and includes healthfulness and various other properties concerned with aesthetics—turbidity, color, hardness, algæ, and the like, which so often make a water extremely unpotable and open to by far the greatest amount of censure.

Approval of plans for sewage disposal should be contingent on the ability of the works to treat and dispose of the sewage in a manner which will not menace health nor create odors, accomplishing these results with economy and certainty.

4. EDUCATIONAL.

Every experienced sanitarian knows the difficulty of putting many good laws into effect or getting sanitary improvements simply because the public is not prepared. It is almost an axiom that public opinion must back every material sanitary advance. Unless it has been brought to perceive the necessity, little lasting good will be accomplished. Education in sanitary matters is therefore of first importance. The bureau has devoted as much time as has been consistent with its other

duties to this very important phase of its work, through the medium of field conferences, inspection, correspondence, reports, through its printed monthly bulletins, by papers and pamphlets on special subjects, through the press, and through exhibits at appropriate gatherings.

A fruitful field of endeavor will lie in interesting officials and operators of sanitary works in occasional technical meetings to discuss the technical phases of their problems. This may be accomplished through an organization in this state known as the "League of California Municipalities" or through branches of some of the national societies devoted to sanitary engineering improvement.

5. ADVICE BY CORRESPONDENCE.

As alluded to previously, approximately 100 inquiries covering miscellaneous and minor sanitary questions reach the office every month which are disposed of by correspondence. A great many of these really require a personal inspection of local conditions, to be handled properly, and others of a special nature show plainly the need of original research work to afford correct advice. It is doubtful if advice by correspondence on sanitary engineering matters of the usual complexity and scantiness of information contained in the inquiries or subsequently brought out, should be offered. In such cases the bureau hesitates to render advice. It is hoped that a larger field staff will make possible more and more the handling of these inquiries by personal visit.

6. LABORATORY.

Through the work of the sanitary laboratory the state performs a service of incalculable value to the public. Little work of this nature would be performed at all if such a laboratory were not maintained by the state. Private laboratories, on account of the expense attached, are seldom called upon for analyses by the great majority of small communities and individuals. On the other hand, usually without persuasion, individuals and officials will avail themselves freely of the service of the State Board of Health laboratories. The sanitary laboratory, maintained by the bureau, performs only sanitary analyses of water and sewage. The service is extended on the following conditions: requests for analysis should state the reason for desiring the work done, describing the supply and its surroundings. In some cases the applicant is required to secure the approval of his request by the local health officer. Bacteriological samples are required to be submitted in sterilized bottles, shipped with ice in containers sent out by the bureau. A charge is made for expressage on this container, both ways.

The determinations are limited principally to those bearing upon the healthfulness and improvement of water supplies and the operation of sanitary works, including the bacteriological analysis of water, sanitary chemical analysis of sewage and occasionally of water, microscopic examination of water and a few of the mineral determinations yielding information essential in any future consideration of water filtration or softening, namely, turbidity, color, alkalinity, hardness and chlorine. Sanitary chemical analyses of water are often requested but are seldom

performed because of the vastly more useful results yielded by the bacteriological examination with much less effort. Most of the work of this bureau is bacteriological.

From the results of the bacteriological test and the knowledge of surroundings required to be furnished with the samples, it is possible to state with considerable definiteness whether the water supply contains human or animal filth. The determinations made include total bacterial count on gelatin and on agar and the confirmation tests for *B. Coli* as recommended for drinking waters on common carriers by the United States Public Health Service. On account of the long distance that samples are necessarily shipped before reaching the laboratory, the total bacterial count is seldom of significance. Chief reliance must be placed on the determination of *B. Coli*, a colon tract organism and significant of sewage pollution. The standard of the United States Public Health Service permits not over one colon bacillus in 50 c.c. of water. This is an extremely high standard which can be met by but few supplies in the state and the standard which the bureau has adopted, being the one in common use over most of the country, is that there shall be not more than one *B. Coli* in 10 c.c. of a water, to be considered safe. From the *B. Coli* count it is impossible to distinguish between human and cattle contamination or to state whether the pollution indicated was due to contamination of the sample by the sampler or actually existed in the supply. Both these considerations detract from the value of the work. California still has its cattle ranges on practically every watershed and often the amount of human waste is extremely insignificant. Only a sanitary inspection of the supply by an expert can indicate the seriousness of the human factor. Sampling, too, necessarily performed almost exclusively by local officials or laymen who fail to realize the sensitiveness of the test, is often affected by their hands and is therefore unreliable. In fact, so little significance can be attached to a sample collected by the average layman that, where a sample shows up badly, seldom is condemnation possible. It is highly desirable that all water sampling shall be conducted by a trained field staff which knows how to sample properly and can evaluate field findings.

The bureau has stimulated the establishment of water analysis in local laboratories at every opportunity. Such infrequent samples as the bureau makes are not to be compared in utility with the daily analysis of the supplies possible in laboratories on the spot. At least three laboratories have added water analysis this year: Eureka, Santa Barbara and San Diego.

Pressing Sanitary Engineering Problems.

Based on its observations of the past year, the following sanitary engineering problems, some being distinctly related to health, and others more especially to human comfort, are now demanding attention which to date is unavailable:

- (1) *Proper disposal* of cannery, winery, packing house, oil and industrial wastes generally.
- (2) *Examination and certification* of bottled waters as unaffected by sewage contamination. It is a serious enough reproach that bottled waters are necessary, and they should be known to be

not *unhealthful* in their sources as well as that they shall possess the therapeutic values claimed.

- (3) *Garbage disposal* is a problem of a magnitude only slightly less than sewage disposal. It is a specialized field for sanitary engineers, yet one which every town trustee feels competent to solve. The result is a wasteful policy or none at all.
- (4) *Examination of ice and ice supplies.* It is a well known fact that ice manufacture does not destroy all living organisms. Freezing does eliminate a great deal of the pollution but the percentage is not high enough to yield a safe ice if made from badly polluted waters. Hence the sources of water for ice manufacture should be examined and certified. Likewise the handling of ice is subject to material regulation, though this is probably a problem for local health concern.
- (5) *Swimming pool sanitation.* The public natatorium, municipally or privately owned, is becoming extremely popular, especially in the interior and warm-belt towns throughout California. Medium-sized towns like Madera, Tulare, Visalia, Selma and scores of others find that these pools are not only popular but profitable. In addition, schools, the Y. M. C. A. and similar public institutions are providing these pools as part of their attractions. A serious health problem is being thereby created due to the ease with which many diseases become transmitted through the medium of swimming pool water.

In most pools the water is purchased from the public supply at a high total cost per filling. The result is that the water is not changed with the frequency necessary to keep it clean. Where the water is heated, the item of fuel expense works toward the same end. Need of regulation is urgent.

- (6) *Oyster bed regulation.* In a good many sections, especially about San Francisco Bay, a considerable oyster industry is springing up. Native oysters and Eastern oysters transplanted for fattening are grown here. In some cases the beds have been shown to be polluted and from the habits of the oyster the bivalve is polluted to far greater extent than the water in which it lives. The problem includes long-time pollution studies to learn what beds are suitable for the industry, what beds are not, the source of the pollution and an analysis of cost, and the like, to determine whether the industry is worth the cost of protecting the beds from pollution.
- (7) *Summer resort sanitation.* Among the peculiarities on which the fame of California rests is that it is the land of sunshine and of the great out-of-doors. Nowhere are the picnic grounds, camping grounds and summer resorts in such abundance as here. And the devotees of Nature are increasing at a most rapid rate since the advent of the automobile. This is a great public industry and an asset of great worth to California and Californians. Resorts are springing up like mushrooms and with as little regulation. Such sanitary features as have been established have been extremely incidental, resulting often in such pollution of streams that the country around becomes not only

decidedly dangerous to health but detractive to enjoyable vacationing. Regulation of both sewage disposal and water supply is urged in these pleasure places. Calamity and fear of vacationing in the mountains will surely result if sanitation of these places is not put on a high plane.

- (8) *Operation of sanitary works.* As stated previously, faithful and intelligent operation is absolutely essential to the obtaining of results in water purification and sewage treatment works. In California the number of promising operators of these works can easily be counted on the fingers. In practically all plants examined the operation is either so wasteful in energy and outlay, or so insufficient, that the works do not perform the functions intended and are used as an argument against further outlay. The obvious remedy of this situation lies with the bureau and can be brought about only by actually devoting one or more days to the operation of each plant at frequent intervals, together with legislation compelling proper operation.
- (9) *Inspection on construction.* With its present facilities the bureau has practically no connection with plans once approved until faulty results from the completed structure calls attention thereto. In the period of construction it is almost inevitable that some unforeseen circumstance will arise which makes it convenient to alter the plan of works, often in vital details. It often happens that the change, made by those ignorant of the sanitary workings of the structure, defeats its whole purpose. Reliance must now be placed on the honesty of those in charge to get approval of the bureau before making the desired changes. Too often this trust is misplaced. The remedy will lie in occasional inspection by the bureau while the work is in progress.
- (10) *Sampling of water supplies.* The unreliability of the sampling of water supplies and the scantiness of information supplied with the sample depreciates the value of the analytical work, as alluded to previously. Yet the results to be obtained are of untold value and wholly indispensable in the improvement of the supplies. Not until the sampling is done by a regular staff specially trained in water sampling and sanitary surveys will the laboratory yield its maximum benefit.

The above problems, all of great public concern, are practically all of such a nature that only sanitary engineering specialists can do them justice. As the problems magnify in size and number with congestion of population and increased industry, the organization to combat them must grow accordingly. The present staff of the bureau is utterly inadequate to cope with the work now undertaken. It can not even respond to all requests for advice and assistance, much less ferret out really serious violations of sanitary laws of great public concern or to discover opportunities where its advice can be applied profitably. To be truly utilitarian, the bureau should do more than take action when its services are sought; it should carry its usefulness widely and promote improved sanitation aggressively. And to that end it should be equipped with adequate staff and funds.

APPENDIX "A"—WATER SUPPLIES.

I. Action on Permits.

Antioch. Application to continue to supply water from the San Joaquin River. Action: temporary permit granted pending installation of efficient chlorination.

Auburn (Pacific Gas and Electric Company). Application: to continue to supply water from existing mountain sources. Action: temporary permit granted pending installation of efficient chlorination.

Benicia (Benicia Water Company). Application: to continue to supply water from Lake Herman and Paddy reservoirs. Action: permit granted to supply water after its chlorination.

Dunsmuir (California-Oregon Power Company). Application: to continue to supply water from Mossbrae Springs, Bear Creek and East Side. Action: permit granted.

Healdsburg. Application: to continue to supply water from shallow wells near Russian River. Action: none.

Kennett (Kennett Water Company). Application: to continue to supply water from Big Backbone Creek. Action: temporary permit pending chlorination of the supply.

Los Banos (West San Joaquin Valley Water Company). Application: to continue to supply water from San Joaquin River via San Joaquin-Kings River Canal and Irrigation Company canal. Action: temporary permit granted, pending chlorination and construction of filtration plant.

National City (Sweetwater Water Company). Application: to continue supply water from Sweetwater River and Reservoir. Action: temporary permit granted pending accumulation of data showing supply to be safe.

Pittsburg (Black Diamond Water Company). Application: to continue to supply water from the San Joaquin River after filtration. Action: none.

Redding (Northern California Power Company). Application: to continue the supply from the Sacramento River. Action: temporary permit granted pending chlorination and sedimentation basin improvements.

San Diego. Application: to continue to supply water from Otay and Moreno reservoirs and San Diego River, following filtration of former two sources. Action: none.

San Luis Obispo. Application: to continue supply from existing spring and creek sources. Action: none.

Santa Barbara. Application: to continue to supply water from Mission Tunnel, Cold Springs Tunnel and de la Guerra wells. Action: temporary permit granted pending chlorination of de la Guerra wells.

Santa Rosa. Application: to continue supply from wells. Action: none.

St. Helena (St. Helena Water Company). To continue supply from York Creek. Action: none.

Ukiah (Ukiah Water Improvement Company). Application: to continue supply from Orr Creek, Gibson Creek and two wells near Russian River. Action: none.

II. Plans Approved.

No plans have been submitted for approval. Such improvements as have been made with the cognizance of the bureau have been of such a nature as to require no plans. The principal improvements have been the installation of chlorination plants, the following having been reported to the bureau informally:

Antioch	National City
Auburn	(Sweetwater Water Company)
Benicia	Oakland
El Centro	Pasadena
Eureka	Pittsburg
La Mesa and East San Diego	Redding
(Cuyamaca Water Company)	Sacramento
Los Angeles	San Diego
Merced Falls	San Jose
Monterey (Monterey	San Luis Obispo
Water Works)	Santa Barbara

III. Investigations, Inspections and Reports.

Antioch. Inspected August 18, 1915, and February 2, 1916. The supply is municipally owned and is pumped from the San Joaquin River opposite the upper end of the city, chlorinated, passed through pressure filters direct to the distributing system on which is an elevated steel tank to equalize supply and demand. Aluminum sulphate added as a coagulant seems to be effective in making complete clarification possible, if used in sufficient amount. Prior to chlorination, urged by the bureau, the bacterial results were very insufficient.

Auburn. Inspected November 3, 1915, March 22, and May 16, 1916. The supply is owned and distributed by the Pacific Gas and Electric Company. The supply is derived from various impounded high Sierra Mountain sources and is diverted from irrigation and power ditches in which gross pollution occurs to settling and service reservoirs near town. The water is extremely turbid at times, due to placer mining and natural wash, and unsafe continuously. Ditch revision is planned to remedy some of the turbid conditions but chlorination is an absolute necessity to overcome the danger from sewage pollution. On the recommendation of the bureau this has been provided.

Benicia. Inspected December 7, 1915. The supply is owned by the Benicia Water Company, derived from various dangerous surface sources, impounded. The bureau required chlorination of the supply and great care in watershed patrol. The measures were adopted.

Calxico. Inspected April 13, 1916. The supply is municipally owned and is derived from irrigating ditches heading at the Colorado River. Works consist of a slow sand filter cleaned by a Blaisdell sand washer. The ditch water is extremely turbid and dangerous all the year. In both respects the effluent of the plant is satisfactory. Whether this type of works would apply to ordinary turbid waters is yet to be demonstrated.

Calipatria. Inspected May 28, 1916. The water supply is furnished by the Calipatria Town and Farms Company and is derived from the

irrigating ditches, the supply coming originally from the Colorado River. It is originally very muddy and polluted, but is treated by plain sedimentation in large settling basins which are thrown out of service and cleaned by hand every few months. The settled water is pumped to an elevated steel tower on the distributing system. The settling basins hold about one week's supply and are operated on the fill-and-draw plan. Investigation revealed that clarification by this method was extremely variable and ineffective and that pollution is at all times present. Recommendations for improvement were as follows: (1) more frequent cleaning of settling basins, approximately eight times per year; (2) remodeling settling basins by addition of baffles to prevent short circuits of unsettled water to the outlet; (3) the use of chemical precipitation, using aluminum sulphate and lime or iron sulphate and lime if baffling is insufficient to produce satisfactory clarification; (4) disinfection with calcium hypochlorite or liquid chlorine to remove pollution; (5) fencing the reservoirs to prevent blowing in of leaves, papers and the like and to prevent trespass by persons who might pollute the water in the basins. The basins and system have since been thoroughly cleaned out and the basins baffled. According to reports, the results of the improvements are so marked as to make unnecessary the use of chemical precipitation at this time.

Calistoga. Inspected March 10, 1916. The water supply is furnished by the Calistoga Water Company and is obtained from two spring-fed mountain streams and, in case of emergency, from a drilled well. One of the stream supplies is subject to objectionable pollution. Posting of warnings against pollution on the watershed and chlorination has been advised.

Cloverdale. Inspected February 23, 1916. The supply is furnished municipally, being derived from two wells dug in the gravel deposits bordering the Russian River. The wells are nothing more than pits about 20 feet deep walled with concrete around the top to exclude flood waters. It is planned to build new reinforced concrete walls in one of the wells. This has been emphasized as a particularly necessary improvement.

Colfax. Inspected May 15, 1916. Similar to Auburn supply.

Colton. Inspected May 25, 1916. The water is furnished from a plant owned by the city, comprising four semiartesian wells, one of which is not properly protected against surface contamination. Protective improvements have been advised.

Dunsmuir. Inspected April 3, 1916. The water system is owned by the California-Oregon Power Company. The supply as gradually developed is derived from Shasta Springs, Northbrae Falls, Bear Creek, and the East Side supply. Analyses indicate that the water is safe.

El Centro. Inspected January 14 and April 13, 1916. Water supply is municipally owned and is derived from irrigating ditches heading at the Colorado River. The water is extremely turbid and grossly polluted. Treatment consists of sedimentation in a battery of excavated settling basins, following which it is pumped into an elevated steel tank on the distributing system. As the result of analyses showing pollution, the city has installed chlorination works.

Escondido. Inspected May 26, 1916. The water supply is both privately and municipally owned. The private supply is furnished by the Mutual Water Company with the San Luis Rey River as source, the water being carried to town in open flumes. The water is often muddy and subject to pollution. Chlorination as a minimum treatment has been required. The municipal supply comes from seventeen wells about 60 feet deep. No analyses are at hand to show the degree of safety.

Eureka. The supply is municipally owned and is derived from the Elk River. The water is highly colored, at times turbid and low in alkalinity, and always polluted by the lumber camps on the watershed. Treatment was formerly limited to filtration in pressure filters. On the advice of the bureau, a coagulating basin has been constructed and provision made for adding aluminum sulphate and soda ash at entrance to the basin. Liquid chlorine is applied just before filtration. The filtered water is pumped to large wood-stave clear-water storage tanks near town. The keenest interest has been stimulated in the management of the waterworks.

Firebaugh. Inspected June 8, 1916. The supply is furnished by the Miller & Lux Company and is derived from the San Joaquin River. Analyses indicate considerable pollution. Much of this is probably of cattle origin.

Folsom. Inspected April 17, 1916. The supply is furnished by the Natomas Consolidated Company and is ditched from the American River to a concrete-lined reservoir holding two or three days supply from which the water flows by gravity to the town. There are no analyses.

Folsom Prison. Inspected June 9, 1916. The main water supply is derived from the American River by pumpage directly into the system at the upper end of which is an equalizing reservoir for continuous service. In addition, considerable drinking water was being obtained from a spring on the premises. Analyses indicated that the spring water was polluted and its use has been abandoned. Pollution was also found in the American River supply and emergency hypochlorite treatment has been installed on the advice of the bureau.

Grass Valley. Inspected March 24, 1916. The supply is purchased in bulk from the Pacific Gas and Electric Company and is municipally distributed. The supply is obtained principally from Lake Spaulding and passes through about 30 miles of open power ditches before reaching the city. The supply is extremely muddy, especially during the winter. It is settled in a series of shallow excavated reservoirs; the treatment is not at all effective and considerable complaint has resulted. The bureau has recommended the construction of a modern rapid sand-filter plant, utilizing the present basins for plain sedimentation and coagulation purposes, rather than piping through certain sections as asked by the city.

Hayward (Independence Grammar School). Inspected September 13, 1915. Preliminary analyses of the water, made following a case of typhoid at the school, indicated the presence of pollution and the use of the well was discontinued at considerable inconvenience to the pupils. The country rock is fissured sandstone and pollution was sus-

pected as traveling underground through the crevices. Subsequent analyses, however, indicated that this was not the case and that the trouble was due to insufficient protection against surface wash at the top of the well. Accordingly, improvements in the way of impervious and higher curbing and slabbing over the well have been advised and carried out.

Healdsburg. Inspected September 26, 1915, and February 24, April 25, and June 6, 1916. The water supply is municipally owned and is derived by pumpage from large concrete cisterns sunk to ground water level along the banks of the Russian River. Indications are that the supply is seepage water from the Russian River. Following a typhoid epidemic about two years ago, an emergency installation for hypochlorite treatment was put in. The above repeated inspections showed that results were extremely discontinuous and the bureau urged the substitution of a liquid chlorine installation. After considerable persuasion the city trustees have acted upon this suggestion.

Hemet. Inspected June 2, 1916. The supply is furnished by the Lake Hemet Water Company with the San Jacinto River as source, being stored in a large reservoir holding over three billion gallons. Numerous sources of pollution exist on the watershed. Algae troubles in the reservoir are frequent. Chlorination has been recommended if it is found by analyses that the storage is ineffective and copper sulphate treatment has been suggested as an algicide.

Holtville. Inspected April 13, 1916. The water supply is municipally owned and is derived from irrigating ditches heading at the Colorado River. The water is highly turbid and polluted. Treatment consists in the use of aluminum sulphate and lime, following which the water is settled in a square concrete basin provided with numerous drain lines over its bottom for ease in cleaning while the tank is in service. The results of treatment are very erratic, due to the unscientific way in which the chemical is handled. The bureau has made preliminary studies which show that iron sulphate is preferable to aluminum sulphate in cost for equal results and has given the dosage of chemicals suited to the water delivered at that time. The dosage, however, should change as the quality of the water changes. There is opportunity for much assistance to the town through the laboratory of the bureau.

Imperial. Inspected January 14, 1916. The supply is municipally owned and is derived from irrigating ditches heading up the Colorado River. It is both turbid and polluted. Treatment consists in plain sedimentation in excavated basins holding two or three days supply. Cleaning of the settled sludge is accomplished manually from time to time. Local officials have displayed no interest in getting improvements.

Indio. Inspected May 26, 1916. The water is supplied by a private individual from a deep well, the upper twenty feet of which is of wide diameter and serves as a pump pit. The floods of the past winter contaminated the pit, apparently causing considerable typhoid. On the advice of the bureau, emergency hypochloriting was maintained for several weeks. Sealing the top of the steel casing and proper pit protection have been recommended.

Kennett. Inspected March 31, 1916. The water supply is owned by the Kennett Water Company and is derived from a reservoir on Big Backbone Creek and taken to town through an open ditch. At times following rains when the water is turbid it is filtered through a pressure filter. Installation of liquid chlorine apparatus has been recommended. The company has preferred to put in an emergency hypochloriting installation. Disinfection is being obtained, but apparently considerable taste results.

Lompoc. Inspected June 6, 1916. The supply is municipally owned and is derived from two large springs and from Miguelito Creek, a small, spring-fed stream about five miles from town. The creek supply is used only in summer. Danger of contamination appears to be slight but can be determined with definiteness only by analyses during the critical season.

Loomis. Similar to Auburn supply. Supplied jointly with Rocklin.

Los Banos. Inspected October 4, 1915, April 3, 24, and June 8, 1916. The water system is owned by the West San Joaquin Valley Water Company, the supply being derived from the main irrigation canal of the San Joaquin-Kings River Canal and Irrigation Company heading at the San Joaquin River, 34 miles away. The canal passes through large pasture fields, and in addition to pollution on the watershed of the San Joaquin River, contains cattle pollution. The water is extremely turbid at times and is never satisfactorily clear. During the summer and fall algæ growths impart a very objectionable taste to the water. The only treatment provided at present is makeshift, consisting of passage through a small basin filled with coarse stone. The bureau has recommended construction of a modern rapid sand filter, together with chlorination.

Los Gatos. Inspected October 7, 1915. The system and supply are owned by the San Jose Water Company, developing certain sources on the watershed of Los Gatos Creek. Several impounding reservoirs are constructed at the upper ends of the best water-producing tributaries, the flow being released into the natural channels, being finally diverted from Los Gatos Creek through a flume to a point about three miles above Los Gatos. The careful manipulation of the system affords a water quite satisfactory in appearance, the first freshets being allowed to go to waste. Secondary pollution, however, occurs in the lower water courses and the company on its own volition has chlorinated the supply. Laboratory control is also maintained by the company. From our brief inspections of waterworks over the state, this is an exceptionally well managed surface water supply.

Mendocino State Hospital. Inspected April 27, 1916. This supply is derived from a mountain stream and impounded in two reservoirs; one of the reservoirs was only recently completed and the inspection was made primarily to determine whether it would be desirable to chlorinate the water used, due to possible contamination produced by the construction camp. It has been recommended that a temporary hypochlorite plant be installed to dose the incoming water until the camps on its banks can be abandoned, possibly sixty days hence.

Menlo Park. Inspected December 17, 1915. The supply is owned by the Bear Gulch Water Company and is derived from surface sources

on fairly inaccessible watersheds and then stored in a quite large impounding reservoir. Samples indicate that the supply as delivered to consumers is safe, though during the summer time the water is considerably affected by algæ. Copper sulphating the reservoir will be the logical remedy.

Muir Woods. Inspected May 28 and June 3, 1916. Reference of a case suspected to have contracted typhoid fever from drinking the stream water flowing through the woods, led to the above inspections and sampling. It was found that the waters in the park are extremely dangerous, and the matter has been taken up with the United States Department of the Interior to see if a safe water can not be piped to the favorite picnic grounds.

Napa. Inspected March 9 and April 3, 1916. The supply is owned by the Napa City Water Company. Water is pumped at two different stations from wells. The supply was examined in connection with an outbreak of dysentery. Inspection and analyses indicate a supply of sanitary quality.

National City. Inspected January 16, 1916. The supply is owned by the Sweetwater Water Company, developing surface sources which are stored in Sweetwater Reservoir, a lake of very great storage capacity. The same distributing system supplies water for domestic use and for irrigation. The watershed is very considerably inhabited and opportunity for pollution, especially during the first freshets, is easily evident in spite of the tremendous storage capacity of the reservoir. The bureau recommended frequent analyses to determine whether chlorination was necessary. The water company, however, has preferred to install chlorination, treating practically the entire supply.

Newcastle. Supply similar to Auburn.

Oceanside. Inspected April 11, 1916. The supply is municipally owned and is pumped from wells in the bed of the San Luis Rey River to distributing reservoirs on the hills above the city. During the January storms the river tore the suction intake away and polluted the wells. For sometime thereafter water was drawn from the river direct, chloride of lime being hastily applied at the reservoir in a bag, a most commendable emergency measure, as the river is decidedly unsafe. In view of the likelihood for a repetition of the same disaster to such river bottom wells, the recommendation has been made for a more permanent standby hypochloriting installation.

Paso Robles. Inspected January 6 and May 13, 1916. The supply is owned by the San Joaquin Light and Power Company and is pumped from a well 50 feet deep near the banks of the Salinas River. Analyses indicate that the water is safe. Investigation was made on account of a dysentery epidemic, the first suspicion being attached to the water supply.

Redding. Inspected March 29, 1916. The supply is furnished by the Redding Water Company and is derived from the upper Sacramento River, being pumped to a small impounding reservoir above the city. A sanitary survey of the watershed shows numerous sewer outlets into the river and thousands of vacationists on the watershed. The danger in the supply is confirmed by analyses. The bureau has

recommended chlorination and improvements by baffling in the reservoir and application of chemicals for better clarification, as the minimum requirement which will prove satisfactory at this time. Chlorination has been installed in conformity with the above requirements and basin improvements will be made when the heavy draft of the irrigation season subsides.

Redlands. Inspected May 26, 1916. The supply is municipally owned and is derived by pumping from a series of twelve wells at four different pumping stations. Wells are deep and apparently well protected against pollution.

Redondo Beach. Inspected January 20, 1916. The water supply is owned by the Redondo Water Company and is obtained from wells said to be about 300 feet deep.

Rio Vista. Inspected March 31, 1916. The water supply is municipally owned and is derived by pumping from two wells near the Sacramento River 147 feet deep. Analyses show the water to be safe, though somewhat affected by salinity. This source has displaced the Sacramento River supply.

Rocklin. See Loomis.

San Diego. Inspected January 15, March 18 and May 31, 1916. The city supply is municipally owned. Until the sweeping away of the Lower Otay Dam in the floods of the past winter, the bulk of the supply was obtained from that reservoir, being then filtered through pressure filters and chlorinated. Following the catastrophe, the bulk of the supply was derived by pumping from wells in the bottom of San Diego River. As soon as roads became passable, the chlorination plant was moved from the filtration plant to treat this very dangerous supply. Work has proceeded in developing another supply from Morena Reservoir and Cottonwood Creek, which sources have now been connected to the filter plant in the same way as the former supply.

San Fernando. Inspected May 20, 1916. The water is supplied by two companies, the Mission Land Company obtaining water from four wells fully protected against surface wash, and the Consolidated Securities Company obtaining water from wells and from Pacoima Canyon. Except for the wells of the latter company, the supplies are contaminated and inadequate. Chlorination has been recommended to correct the former. The city is considering the installation of a municipal waterworks.

San Jacinto. Inspected June 1, 1916. The water supply is owned by the city and is derived from a drilled well 150 feet deep. Recent floods damaged the plant and it is planned soon to abandon this well for another drilled on slightly higher ground, a few hundred feet away. Sanitary surroundings seem to be satisfactory.

San Jose. Inspected September 15, 1915. Supplied by the San Jose Water Company. Same supply as Los Gatos.

San Luis Obispo. Inspected January 7 and February 21, 1916. Supply is municipally owned and is derived from various springs located on inaccessible watersheds, delivered to small excavated service reservoirs located near town. In common with most towns in the vicinity, water famines threaten practically every summer and reliance

must be placed on utilizing the stream flow in San Luis Obispo Creek and tributaries during that season. The spring supplies appear to be of good sanitary quality though extremely hard. The creek supplies on the other hand are extremely dangerous and the bureau has recommended chlorination as standby treatment when the creek supply must be drawn upon. Chlorination has been installed.

San Miguel. Inspected January 6, 1916. The supply is furnished by the San Miguel Water Company and is pumped from a dug well 60 feet deep in the center of town to a service reservoir on the hills above. Though there are several cesspools and privies within 60 feet of the well, analyses indicate that none of the pollution affects the supply.

Santa Barbara. Inspected February 21 to 25 and June 6, 1916. The water system is owned by the city, the supply being derived from three main sources, Cold Springs Tunnel, Mission Tunnel and the de la Guerra wells, there being several service reservoirs about the city to afford continuous supply. Of these various sources, the only one which can be said to be truly safe is the Cold Springs Tunnel supply. The de la Guerra wells are subject to easy pollution from filthy sloughs through rusted casings and the Mission Tunnel may be polluted by the passage of workmen through the tunnel, the only easy means of access to the country beyond the Santa Ynez Range. The water supplies are very hard. It is planned to develop an impounded supply on the Santa Ynez River, the foundation for a dam being already started. After a careful inspection the bureau ordered chlorination of the de la Guerra wells, urged chlorination of the Mission Tunnel supply and suggested early sanitary patrol of the Santa Ynez watershed, and a careful policy of medical examination of workmen on water supply development there, as well as of miners who may be permitted to develop the cinnabar resources on the watershed.

Santa Monica. Inspected January 19, 1916. Water is supplied by four different companies, as follows: The Santa Monica Water Company and Irwin Heights Water Company supply water within Santa Monica only. The City Water Company and the Ocean Park Water Company supply water within Santa Monica and also to parts of Venice which lies just to the south. These supplies are all obtained from wells said to range from 200 to 300 feet in depth.

Santa Paula. Inspected June 5, 1916. Water supply is furnished by the Santa Paula Water Company, diverting its supply from Santa Paula Creek through a pipe line leading to a three-million gallon reservoir, being an earth excavation lined with concrete which supplies the distributing system. The watershed is subject to numerous sources of pollution by residents, public roads, summer resorts, and the like. Chlorination has been recommended.

Santa Rosa. Inspected July 6, 1916. The water supply of Santa Rosa is furnished by two systems, one owned by the city and the other by the Santa Rosa Water Company. The city supply is derived entirely from two deep drilled wells and a tunnel about two miles from the city. Improvements now under way will eliminate existing dangers of contamination. The water company's supplies are derived from

Santa Rosa Creek and from a large spring, the water being pumped from the latter. Both these sources are subject to contamination. Chlorination has been advised to eliminate the dangers.

Sonoma. Inspected February 21, 1916. The water supply is furnished by the Sonoma City Water Company and is derived from large springs at the edge of town. Inspection indicates satisfactory purity.

St. Helena. Inspected March 10 and May 4, 1916. The supply is furnished by the St. Helena Water Company and is diverted from York Creek in the hills near the city and is stored in an impounding reservoir of considerable capacity, just above town. The stream is subject to considerable pollution and algæ growths are prevalent during the summer. Chlorination and algæcide treatment with copper sulphate have been recommended. Both improvements have been put into practice successfully.

Truckee. Inspected June 10, 1916. The supply is drawn from several sources. The Shaeffer Water Company supplies about 300 persons, taking the supply from a spring. The McGlashan Water Company supplying about 400 people, obtains its supply from a tunnel and by pumpage from the Truckee River. The Southern Pacific Railway gets its supply from Trout Creek. The Buckman supply is furnished to but ten or twelve families. In addition, there are several private supplies drawn mostly from springs. Little is known of these supplies except that on the Trout Creek system there is annually more or less typhoid. The Truckee River is also known to be dangerously polluted.

Ukiah. Inspected February 23 and April 27, 1916. The water is supplied by the Ukiah Water and Improvement Company and is derived from Fisher Creek and from wells dug in gravel deposits bordering the Russian River. Recommendations were made for protecting the wells from inflow of flood waters. Aside from possible pollution from a fish hatchery, Fisher Creek appears to be a reasonably safe source of supply.

APPENDIX "B"—SEWAGE DISPOSAL.

I. Action on Permits.

Alhambra. Application: to dispose of sprinkling filter effluent of tri-city project—Alhambra, Pasadena and South Pasadena—onto city sewer farm on Repetto Rancho or into Los Angeles River during winter. Action: permit granted.

Beverly Hills (Rodeo Land and Water Company). Application: to discharge sewage into Benedict Canyon Wash. Action: permit granted on provision that the sewage be further treated in a sprinkling filter of satisfactory design prior to discharge.

Calistoga. Application: to dispose of sewage onto a four-acre sewer farm in summer and into Napa Creek in winter. Action: temporary permit granted pending demonstration of satisfactory operation of farm and effect on creek.

Calwa (Santa Fe Railway Company). Application: to discharge sewage into wells about 300 feet deep, reaching to water-bearing gravel. Action: permit granted with the provision that sewage be treated to high degree of stability, clarification and sterility.

Colma (J. H. Dennis). Application: to dispose of sewage of private system by subirrigation in an extension of Ninetieth street, following clarification in an Imhoff tank. Action: permit granted.

Compton. Application: to discharge contact bed effluent into Compton Creek. Action: permit granted.

Eagle Rock (Strickland Home for Boys). Application: to dispose of sewage by subirrigation. Action: permit granted.

El Centro. Application: jointly with Imperial, to discharge Imhoff tank effluent into New River. Action: permit granted.

Holtville. Application: to dispose of septic tank effluent onto existing sewer farm. Action: temporary permit granted with the provision that the septic tank be modified along the two-story principle.

Imperial. See El Centro.

Pasadena. See Alhambra.

Paso Robles. Application: to discharge crude sewage into Salinas River for the year 1916. Action: temporary permit granted.

Pittsburg. Application: to discharge septic tank effluent from a small subdivision into New York Slough. Action: permit granted.

Pleasanton (Hacienda—Hearst Ranch). Application: to dispose of sewage by subirrigation adjacent to Arroyo de la Laguna. Action: permit granted.

Redding. Application: to dispose of sewage onto Bassett farm. Action: permit granted.

Reedley. Application: to discharge sewage into Kings River. Action: permit granted with the provision that the effluent be further oxidized in a modern sprinkling filter and that a low river stage disposal be on sand bars along the river, or chlorinated.

Riverside. Application: to dispose of sewage on 500-acre sewer farm adjacent to Santa Ana River. Action: permit granted.

Sacramento. Application: to discharge screened effluent of so-called annexed territory into Sacramento River. Action: permit granted.

San Bruno (Belle Air Addition). Application: to dispose of sewage by subirrigation along San Francisco Bay shore. Action: permit granted.

Santa Barbara. Application: to discharge sewage into Santa Barbara Channel. Action: temporary permit granted with the provision that beach nuisance and pollution of bathing waters be avoided.

Sebastopol. Application: to discharge septic tank effluent into adjacent lagoon. Action: permit granted.

Sonoma. Application: to dispose of septic tank effluent on the city sewer farm. Action: temporary permit granted pending demonstration of satisfactory manipulation of farm.

South Pasadena. See Alhambra.

St. Helena. Application: to discharge septic tank effluent into Napa Creek. Action: permit denied; permit granted to dispose of septic tank effluent onto city sewer farm.

Walnut Grove (Alex. P. Brown). Application: to discharge septic tank effluent of Oriental quarters into the Sacramento River. Action: permit granted.

Willows. Application: to dispose of sewage on city sewer farm. Action: temporary permit granted pending installation of works to reduce nuisance to the vicinity.

Winters. Application: to discharge sewage into Putah Creek. Action: temporary permit for sixty days to permit change to disposal elsewhere.

II. Plans Approved.

Auburn. Plans for Imhoff tank.

Beverly Hills (Rodeo Land and Water Company). Plans for sprinkling filter.

Calwa (Santa Fe Railway). Plans for Imhoff tank, contact beds and chlorination works.

Colma. Plans for Imhoff tank and subirrigation system.

Compton. Plans for Imhoff tank and contact beds.

El Centro. Plans for Imhoff tanks.

Imperial. See El Centro.

Lompoc. Plans for Imhoff tank.

Pittsburg. Plans for septic tank.

Reedley. Plans for sprinkling filter and final settling tank.

Sacramento. Plans for sewage screens.

San Bruno (Belle Air Addition). Plans for septic tank and subirrigation system.

III. Inspections, Investigations and Reports.

Alhambra. Inspected May 16, 1916. The city has no sewage disposal at present. Definite plans have been prepared for handling the sewage of Pasadena, South Pasadena and Alhambra jointly on a sewer farm, following treatment by an Imhoff tank and sprinkling filter of the highest type or by the activated sludge method. At the present time the project is blocked by the incorporating of the community of New Montgomery, purposely to defeat the project. There is possibility that the incorporation may not be sound on account of the previous voting by the sewer farm and vicinity to annex to Alhambra.

Alviso. Inspected December 28, 1915. The clam beds in Alviso Slough were investigated for pollution and condemned.

Antioch. Inspected August 18, 1915. The sewage is discharged directly into the San Joaquin River opposite the city within one block of the waterworks intake, without treatment.

Anaheim. Inspected October 16, 1915. The sewage is clarified in an Imhoff tank of the earliest design in this state, being tightly covered except for manholes. In spite of the difficulty in operation, the tank is well managed and normally produces an excellent effluent which is disposed of by irrigation on a citrus farm.

Beverly Hills (Rodeo Land and Water Company). Inspected October 13, 1915, and May 25, 1916. The sewage was formerly disposed of after settling in a septic tank, into a dry wash which later flows by Sawtelle where it created considerable nuisance. On the bureau's recommendation, a pumping station and sprinkling filter have been constructed which are yielding a very satisfactory effluent, being clear and odorless.

Calistoga. Inspected March 10 and May 5, 1916. The city recently completed a sewer system, the effluent passing through septic tanks, being then disposed of into Napa Creek. The bureau has required discontinuing this method of disposal, suggesting utilization of a five-acre municipal sewer farm. The change has been made.

Calwa (Santa Fe Railway Shops). Inspected November 17, 1915, and April 6, 1916. Sewage from the shops and car-washing platforms was formerly disposed of untreated except for sedimentation in large open ponds, by pumpage into three deep wells, there being no other outlet for the sewage than into the deep strata. Salt tests and bacteriological studies proved conclusively that this practice was polluting the main water supply well, reaching to the same depth, about 1,100 feet distant. On the bureau's recommendation, a small but most complete treatment works has been put in, consisting of an Imhoff tank, pumping station, a bottom-fill contact bed, an automatic chlorination plant, utilizing the open basins as final settling chambers.

Carpinteria. Inspected February 24, 1916. The community is unserved. Certain sections desiring to utilize a land drainage system for the purpose of disposal, brought the matter up for approval of this board. To prevent nuisance in the drainage system during the summer months, the bureau deemed it advisable to require the installation of septic tanks and subsurface distributors so that the only sewage reaching the drains will be seepage water.

Castella (Crag View Hotel). Inspected April 3, 1916. This hotel formerly disposed of its sewage directly into the Sacramento River, polluting the water supply of Redding. On the bureau's recommendation a septic tank and subirrigating system have been installed.

Chico. Inspected April 24 and June 4, 1916. The sewage is disposed of by irrigation on alfalfa fields, following clarification in an Imhoff tank. Maloperation of the tank is resulting in an inferior effluent. Recommendations have been made for material improvements.

Chino. Inspected June 1, 1916. The city is planning to install a sewer system with an outlet to an Imhoff tank, the effluent of which will be disposed of on a ten-acre tract of sandy land to be thoroughly underdrained into Chino Creek. Complaints of anticipated jeopardy of water supply have been investigated and found to be without proper basis, in the opinion of the bureau.

Cloverdale. Inspected February 23 and April 7, 1916. The sewage is disposed of by irrigation without treatment on privately owned land planted to grapevines and beans bordering the Russian River. It is reported that sewage reaches the river during the rainy season.

College Park. Inspected September 16 and December 19, 1915. The city sewage formerly passed through a septic tank to a makeshift contact bed, thence into Guadalupe Creek. The stench surrounding the works was absolutely unbearable. On the bureau's recommendation, a successful effort at voting bonds to connect the system with that of San Jose has made possible the abandonment of the works.

Colma. Inspected February 8, 1916. Most of the community is unsewered. A private system, serving about 150 people, was put in this year, the sewage being clarified in an Imhoff tank and disposed of by subirrigation, on the advice of the bureau.

Colton. Inspected May 25, 1916. The sewage is disposed of without treatment on very sandy soil, bordering Santa Ana River. At times there is overflow to the river direct. Nuisances are not complained of.

Compton. Inspected October 17, 1915. A new sewer system has recently been completed, the sewage being treated in a works consisting of an Imhoff tank, a pumping station and bottom-filled contact beds, the final effluent being disposed of into Compton Creek.

Coronado. Inspected May 29, 1916. The sewage of the town is disposed of through a main outfall sewer discharging into San Diego Bay about 700 feet from shore. The sewer is submerged and the rise and fall of the tide results in a backward and forward flow in the sewer periodically forcing out accumulations of air in the pipe when the tide rises, resulting in nuisance. Recommendations have been made by the bureau for the collection of more working data to be used in preparing plans for a receiving basin operated by gravity or with pumps to prevent the backing up of sewage at high tide.

Davis (University Hotel). Inspected February 5, 1916. There is no sewer system in the town and this hotel attempted to get rid of the sewage by sinking a sewage well to gravel. The work was stopped by

the bureau on account of the likelihood of the pollution of water-supply wells in the vicinity and recommendations made for alternative disposal by a subsurface tile system of distribution.

Dunsmuir. Inspected April 3, 1916. This large community has no sewer system. A few individual sewers discharge directly into the Sacramento River. The city has in contemplation the voting of bonds to put in a comprehensive sewer system.

Eagle Rock (Strickland Home for Boys). Inspected January 20, 1916. This home, intending to open, sought the advice of the bureau on sanitary disposal of its sewage. Recommendations for pumpage, tankage and subirrigation were made.

El Centro. A complete sewer system has recently been completed, receiving also the sewage of Imperial, three miles distant. The sewage is clarified in Imhoff tanks, approved by the bureau, and the effluent disposed of into New River, a saline stream.

Escondido. Inspected May 26, 1916. The sewage is discharged into a small creek south of town after clarification in a septic tank built eight years ago. Indications are that the tank, which has never been cleaned, is filled with solids. Disposal into the gravel creek bottom seems to be satisfactory.

Firebaugh. Inspected June 8, 1916. This community, recently incorporated, has no sewer system. Disposal of an effluent would be extremely difficult on account of the adobe nature of the surrounding soil. Accordingly the bureau has discouraged plans for a comprehensive system, advising continued reliance on privies kept sanitary, or in individual cesspools in certain cases.

Folsom. Inspected April 17, 1916. This unincorporated community, desiring a sewerage system, has so far proceeded as to have formed a Sanitary District. A report was rendered by the bureau on the feasibility of sewerage and disposal of sewage without polluting the American River.

Folsom Prison. Inspected June 9, 1916. Sewage of the prison is pumped from large sumps, functioning as sedimentation tanks, onto various forms of garden truck. The bureau has recommended that greater care be exercised in the future to the end the sewage shall water only vegetables which are eaten cooked and which do not come in contact with vegetables eaten raw in the course of handling.

Fowler. Inspected November 17, 1915. The sewage is clarified in an Imhoff tank of early design, the effluent being disposed of throughout the year by broad irrigation on alfalfa fields. Except for prolific mosquito breeding, the disposal seems to be satisfactory.

Fresno. Inspected November 18, 1915. The sewage is passed through a battery of septic tanks, the effluent being disposed of by irrigation on alfalfa fields. Extreme unloading of the tanks causes much foulness in the ditches.

Fullerton. Inspected October 16, 1915. The sewage is clarified in an Imhoff tank of early design yielding a well clarified effluent which has been disposed of by broad irrigation. The worst criticism of the sewer farm is its water-logged nature. Eventually drainage will probably be required.

Gridley. Inspected June 4, 1916. The sewage is passed through a septic tank and disposed of into a slough about a half mile distant.

Guerneville. Inspected April 8, 1916. Only a portion of the business section of the town is sewered, the effluent discharging directly into the Russian River just above numerous bathing places and summer resorts. It is planned to dig a large cesspool in the gravelly deposits to overcome the objections to river pollution.

Hanford. Inspected November 17, 1915. The sewage is clarified in an Imhoff tank of early design, following which it is disposed of into a slough adjoining, or by broad irrigation on private farms two or three miles distant. During the fruit season, the effluent is said to be very poorly clarified and it is also reported that the ponding of sewage in the slough is injuring the orchards in the vicinity, as well as creating a nuisance. The city is looking forward to construction of high grade works disposing of the effluent into the irrigation canals.

Healdsburg. Inspected September 26, 1915, February 24, 1916; plant tested April 24 and 25, 1916. The sewage is passed through a septic tank, the effluent formerly being disposed of into Dry Creek, a tributary of the Russian River. On the requirement of the bureau, this practice has been discontinued, the effluent being disposed of by irrigation on a nursery along the creek bank. A two-day test of the plant indicated that it was choked full of solids and utterly ineffective.

Hemet. Inspected June 2, 1916. The sewage is passed through a septic tank the effluent of which is periodically raised by an automatically controlled pump to a large concrete storage basin, holding about three days flow. At intervals the contents of this basin are drawn off for irrigating a 40-acre farm owned by the city. A five-year contract has been entered into with a farmer whereby he is given the use of this land and at the expiration of the contract agrees to turn over the farm to the city, planted to peach trees in good condition.

Hermosa Beach. Inspected January 19, 1916. In order to secure sewerage of higher levels and to get ocean disposal, the city is considering abandonment of the present makeshift arrangement and substituting one of the most modern types of treatment. Plans for an activated sludge plant of unusual design have been approved by the bureau.

Holtville. Inspected April 13, 1916. The sewage was formerly passed through a hopper-bottom septic tank, after which it was disposed of by broad irrigation on land farmed for various purposes. The effluent was extremely odorous and on the advice of the bureau the tank has been converted into a double-deck or Imhoff tank delivering a fresh, nonodorous effluent which is then disposed of by the furrow method of distribution. No further complaints have been received.

Imperial. See El Centro.

Isleton. Inspected February 3 and March 31, 1916. The recent destruction of the Oriental quarter, comprising the larger portion of the town, has resulted in the construction of new sanitary structures with sewerage facilities. On the advice of the bureau the sewage is passed through a septic tank for clarification purposes, following which it is intended to dispose of the effluent by subirrigation methods to prevent odors.

King City. Inspected October 8, 1915. The city has in contemplation the construction of a sewer system. The sewage is to be treated in an Imhoff tank and disposed of by irrigation on beet land or into the Salinas River at high stage, according to the recommendations of the bureau. Plans for the project have been prepared and approved.

Lompoc. Inspected June 6, 1916. Bonds have been voted to install a comprehensive system of sewers with an outlet to an Imhoff tank, the effluent of which will be discharged into the Santa Ynez River.

Long Beach. Inspected January 19 and May 20, 1916. The sewage is clarified in one of the newer types of works known in this country, a Reinsch-Wurl screen, the screenings being incinerated and the effluent disposed of through an ocean outfall about 900 feet long. A test of the plant on May 20th indicated that clarification was not as satisfactory as that obtained by tankage treatment in Imhoff tanks. On further inspection it appears that this may be due in part to a structural misfit which will be repaired.

Los Angeles. Inspected January 20, 1916. The sewage of Los Angeles is disposed of through an open outfall at Hyperion. Complaints, due to beach nuisance thereby created, have been received for several years. Considerable effort has been devoted to inducing the city to install treatment works to rectify conditions. A bond issue for this purpose has failed but another is in contemplation.

Los Banos. Inspected April 24, 1916. The sewage is carried about two miles from town to a septic tank, the effluent of which is disposed of into Mud Slough, finally reaching the San Joaquin River. A gravity sludge outlet permits cleaning into the same slough.

Los Gatos. Inspected October 7, 1915; tested May 11-13, 1916. The sewage is treated in a strictly modern works consisting of Imhoff tanks, dosing tanks, sprinkling filters and final settling tank, the effluent being then disposed of into Los Gatos Creek. Operation results have been variable, due to poor management and unusual plant loading. At times the stability has been unusually high and again very low, likewise the Imhoff tank has frequently performed peculiarly. Considerable study of this plant will in all probability be required before the trouble can be rectified.

Los Gatos (The Oak Sanatorium). Inspected December 17, 1915. The sewage of this place is disposed of by cesspool methods which have been unsatisfactory, due to overflow. On account of the restricted area, the bureau has recommended extension of the cesspool disposal, using more cesspools located several yards apart.

Madera. Inspected April 6, 1916. This city disposes of its sewage on land in the crude state. On account of the nuisance which has caused complaint from neighbors, the city is contemplating some treatment. The bureau is convinced that under the local conditions, sewer farming will not be long satisfactory and has recommended only temporary expedients at this time, consisting of the excavation of a basin serving as a septic tank, the sewage being disposed of by careful distribution over a broad acreage of drainable soil.

Marysville. Inspected August 20, 1915. The city sewage is disposed of by pumpage from a sump serving as a settling tank onto a 60-acre sewer farm between the Yuba and Feather rivers. Poor management

in the distribution of the sewage resulted in complaints from Yuba City across the river. Instructions on the proper distribution of sewage, aimed principally at preventing ponding, were given by the bureau. No further complaints have been received.

Mill Valley. Inspected February 3, 1916. The sewage is clarified in an Imhoff tank to which it is lifted by pumps and the effluent disposed of by gravity into the tide flats in the vicinity. Considerable complaint on nuisance has been reported. The cause of the odors seems to be a combination of poorly selected final disposal, lack of care in operating the Imhoff tank, and too long a storage in the pump chamber. In addition, during the winter time, the intercepting sewer is found to be too small to carry away storm water and manholes overflow in the town. The city proposes to lay a larger outfall sewer.

Moraga. Inspected June 28, 1916. The Burgess Land Company have informally taken up the question of disposal of sewage from tracts expected to be bought up soon. A scheme of disposal, including a septic tank and subirrigation methods have been indicated. Higher grade works than these as desired by the company seem inadvisable at this time due to the large oversize of such works in the early years.

Oceanside. Inspected April 11, 1916. The sewage of the city, disposed of normally into the ocean following passage through a septic tank, was interrupted by the severe storms of the past winter which threw a vast sand bar about the outlet. The city desired advice on the type of construction to extend the sewer beyond the bar. Universal-jointed pipe laid in a deep jetted trench was advised.

Ontario. Inspected October 16, 1915. The sewage is disposed of in the crude on a 175-acre farm three miles from town. The soil is very absorptive and no nuisance is complained of.

Orange. Inspected October 16, 1915. The sewage is disposed of by irrigation following clarification in a septic tank, reconstructed on the Imhoff principle. Clarification results are excellent. •

Pasadena. See Alhambra.

Paso Robles. Inspected January 6 and May 13, 1916. The sewage of the city has been disposed of in the crude state into the Salinas River for many years. Recurring damage suits recently have caused the trustees to provide a fund for improvements which will become available January 1, 1917. The bureau's advice has been solicited on how to get through the present year in the best possible manner. Instructions have been given along this line and the proper handling of the sewage disposal in the future outlined.

Pittsburg. Inspected October 20, 1915. Approval was asked of a sewerage system and septic tank, taking care of the small portion of the town which could not be sewered into the main system. While the sewage will pollute the San Joaquin River above the water supply intake, it was not apparent that this effect would be any greater with the proposed disposal than if pumped into the main outfall discharging below the intake, on account of the effect of tides, and the proposed proposition has considerable advantage in cost.

Pleasanton (Hacienda—Hearst Ranch). Inspected June 6, 1916. A proposed scheme of sewage disposal to serve a maximum of 200 persons,

consisting of an Imhoff tank and subsurface disposal in duplicate along Arroyo de la Laguna was inspected and approval of the project given.

Pomona. Inspected May 23, 1916. The sewage is settled in a septic tank and the effluent used for irrigating 160 acres of land six miles west of town. Indications are that the tank needs cleaning. The farm is completely shut in by hills and exceptionally well situated for sewage disposal purposes.

Redding. Inspected March 29, 1916. The city has a 40-year contract, dating from 1890, with the owner of a farm near town to dispose of its sewage, untreated, but without nuisance by irrigation on his land. At the time of inspection the farm was apparently being operated in accordance with the terms of the contract. During the rainy seasons it is understood that some sewage overflows into the Sacramento River near by.

Redlands. Inspected May 26, 1916. The city sewage, untreated, is sold under contract for \$1,000 per annum for irrigating purposes. The purchaser resells the sewage for irrigating some 300 acres of citrus land and in addition waters 500 acres of grain land owned by himself which receives the excess flow. All this land is sandy and well adapted to sewage disposal.

Redondo Beach. Inspected January 20, 1916. The septic tank and 30-acre sewer farm on which alfalfa is grown, were inspected. The entire plant is apparently doing good work.

Reedley. Inspected October 11 and 12, November 15 and 16, 1915. The city sewage was formerly disposed of into the Kings River, following clarification in an Imhoff tank and application to a makeshift sprinkling filter. Investigation of the effect on the Kings River caused the bureau to sustain complaints on this score and to recommend the substitution of a modern sprinkling filter and final settling tank for the one in use. These works are now under construction.

Rio Vista. Inspected March 31, 1916. The sewage is pumped into the Sacramento River following clarification in a septic tank.

Riverdale. Inspected April 7, 1916. Wastes from the local creameries have caused extreme nuisance in the vicinity. The bureau has recommended tankage treatment employing a two-day retention period, following which the effluent shall be disposed of into the underlying sand beds except during the season when a nearby irrigating canal carries considerable water, when the dilution method may be employed.

Riverside. Inspected February 25, 1916. The sewage was formerly disposed of on a sewer farm of restricted area, following clarification in an open basin-like septic tank. The bureau has approved of a scheme of future disposal similar to the one heretofore in use but employing a much larger acreage and utilizing the well-recognized methods of sewage distribution to secure minimum offense.

San Bernardino. Inspected May 25, 1916. Sewage is taken under contract by the Delta Water Company for irrigation purposes. The company built and maintains an outfall sewer three miles long and a septic tank for primary treatment, disposing of the effluent on 390 acres of sandy land. Last winter floods damaged the system. During the

repair work the sewage was discharged directly into the Santa Ana River. During the winter the sewage enters the river regularly when the land is water-logged.

San Bruno (Belle Air Addition). Inspected December 17, 1915. The sewage was formerly disposed of in cesspools located within 15 feet of the water wells and storage cisterns. The cesspools filled up so that proper flushing did not occur in the sewer system and much complaint resulted. The bureau recommended construction of a pumping station, septic tank, and subirrigation disposal in the granular sandy flats below.

San Jose. Inspected December 18, 1915. The sewage of the city is disposed of into the upper end of arms of sloughs near Alviso, without treatment. Extreme nuisance results in the vicinity. The last mile or more of outfall, being a buried flume construction made several years ago, is badly rotted and in need of repair. Cave-ins are frequent, causing the outfall to flood the surrounding territory. Before reconstruction starts it will be advisable to investigate the entire sewage disposal problem and report on methods suitable in the distant future.

San Luis Obispo. Inspected January 7 and February 21, 1916. The city sewage was formerly disposed of into a small creek near town, following passage through a septic tank. So-called contact beds provided in the design have been abandoned. On account of creek nuisance resulting in the periods of low flow, an improved method has been sought. The bureau has proposed the utilizing of a rented sewer farm about a half-mile distant, utilizing the present septic tank for preliminary clarification.

Sanger. Inspected April 6, 1916. The city has recently completed a septic tank for treating its sewage, the effluent being disposed of onto land along sloughs in the vicinity of the Kings River. No investigation has been made of the effect of this sewage on the Kings River.

Santa Barbara. Inspected February 24 and June 6, 1916. The sewage is discharged in the crude state through two outfalls into Santa Barbara Channel about 500 feet from shore and opposite very popular beaches. The sewage solids float back to shore and cause much nuisance besides a danger to health. The bureau has advised careful study of the problem, indicating also possible means of satisfactorily dealing with the problem. Pending the completion of satisfactory works, the bureau has recommended the quarantining of the beach.

Santa Clara. Inspected September 15, 1915. The city sewage is clarified in a septic tank, the effluent being disposed of by irrigation on an alfalfa field about two miles distant, by-passing a so-called contact bed provided in the original design.

Santa Maria. Inspected January 17 and June 7, 1916. The city sewage is conveyed through a three-mile outfall to an Imhoff tank, the effluent of which is disposed of by makeshift irrigation on a farm having excellently suited soil. The plant is not at all satisfactory on account of the long length of outfall, which is responsible for intense odor in the tank influent. Certain minor details of the design are also in error, correction of which has been recommended.

Santa Monica. Inspected January 19 and May 21, 1916. The sewage is treated by one of the few electrolytic plants in this country. On the dates of inspection it was not apparent that the sewage was being improved by the treatment.

Santa Rosa. Inspected April 29 and June 6, 1916. The sewage is disposed of in a very crude fashion. It is first passed through make-shift septic tanks, passing thence into batteries of large "evaporating ponds," the remainder of the sewage being allowed to seep away on the surrounding city farm comprising about 130 acres. The bureau has recommended that considerable data be collected and the entire problem studied with a view to revising the whole method of handling the sewage.

Sausalito. Inspected February 8 and June 19, 1916. On one of these inspections the clam beds in the vicinity were examined for sewage pollution and several of them condemned. On the other inspection a sanitary survey of the city was made.

Sebastopol. Inspected April 26, 1916. The city sewage is passed through a poorly-operating septic tank, the effluent being disposed of into lagoons which finally find their way into the Russian River. No nuisance, however, seems to be created.

Sonoma. Inspected February 21, 1916. The city sewage is passed through a septic tank, the effluent being disposed of onto a city sewer farm of limited acreage and having dense soil. Considerable difficulty has resulted which has caused complaint from nearby landowners. The bureau has given explicit instructions on the best mode of handling the farm to minimize the objection, aimed principally at frequent orientation of flow followed by deep cultivation.

Sonoma (Sonoma State Home for Feeble-minded). Inspected February 21, 1916. A new septic tank was recently completed, together with facilities for treating the effluent with calcium hypochlorite. Operation is now in an experimental stage.

South Pasadena. See Alhambra.

St. Helena. Inspected March 10th; tested May 2 to 5, 1916. The sewage was formerly disposed of into Napa Creek, following passage through a septic tank. The bureau has ordered the discontinuance of sewerage into Napa Creek, suggesting as an alternative disposal the development of land treatment, either on the city sewer farm or onto adjacent farms. A test of the plant indicated that all tanks were filled with solids and badly in need of cleaning.

Stockton. Inspected June 30, 1916. All the city sewage at present discharges into Stockton Channel, a tidal arm penetrating the center of the city. The arm is found to act as a vast settling basin, and only a small degree of pollution results in the San Joaquin River to which it is tributary. An unbearable nuisance, however, has resulted in the town for many years. The city has in contemplation plans for remedying this condition by sewerage directly into the river, following some form of treatment. The above inspection was preliminary to a determination of the restrictions which should be imposed in order to protect the water supply in the lower San Joaquin and to prevent nuisance in the river.

Tahoe. Inspected June 10 and 11, 1916. The following resorts were inspected and found to be initiating, or to have completed, improvements in sewage disposal as stipulated by the Board: Brockway, Tahoe Vista, Tahoe Inn, Tahoe Tavern, Homewood, McKinney's, Moana Villa, Pomin's, Emerald Bay Camp, The Grove, Al Tahoe, Young's Hotel and Connelly's Resort. Uniformly the treatment adopted is clarification in a septic tank, either wood or concrete, followed by seepage disposal in inverted flumes laid underground. The soil is particularly loose and absorptive.

Truckee. Inspected June 10, 1916. A brief inspection shows that the sewage of the sanitary district, after passing through a make-shift septic tank, finds its way almost directly into the Truckee River. Sanitary conditions about the town are extremely bad and much work of a vigorous nature will be required in the near future.

Ukiah. Inspected February 23 and April 27, 1916. The sewage is passed through a septic tank which clarifies inefficiently and is then conveyed in an open ditch to the Russian River. The bureau has given the town to understand that a change of disposal must be made at least during the summer months when the river stage is low and has suggested the development of land treatment, distributing the sewage by broad irrigation or by furrows.

Universal City. Inspected January 15, 1916. This place represents solely a moving picture enterprise. The premises are completely sewered, the sewage being pumped from a sump, following pipage through a septic tank followed by passage through a rock-filled tank, into cesspools in the adobe soil of hills above. On account of the extreme loading of these cesspools at times, they frequently overflow, the sewage then finding its way into the Los Angeles River above a water supply intake of the city of Los Angeles. The city of Los Angeles is endeavoring to bring about improvement at Universal City by its own efforts. The bureau has recommended a high-grade treatment plant consisting of an Imhoff tank, sprinkling filters, chlorination, the final effluent being disposed of onto a sand bar along the river. The Los Angeles city officials, skeptical of the amount of attention which such a plant would receive, are endeavoring to compel the use of orchard land across the river. In the judgment of the bureau, there is greater likelihood of untreated sewage reaching the river from this area than by the method proposed.

Vacaville. Inspected June 2, 1916. The sewage is passed through a septic tank which clarifies very ineffectively, the effluent being utilized by an adjoining orchard or allowed to run onto some waste land in the vicinity. Odors are distinctly noticeable in the vicinity.

Venice. Inspected January 19, 1916. The sewage is passed through a septic tank situated in the city yards, the effluent being disposed of by pumpage into the ocean through a short outfall sewer.

Walnut Creek. Inspected September 3, 1915. The sewer system is privately owned by the Burgess Land Company and was built primarily to serve anticipated development. Only a small portion of the town of Walnut Creek has connected with the system. Treatment works of a fairly high order are provided, consisting of a two-channel Imhoff

tank, dosing tank and contact bed, the final effluent being discharged into San Ramon Creek. Expected connection with the sewer has never materialized and the plant is approximately thirty times too large. The attendant aging of sewage and lack of care has resulted in considerable nuisance on account of odors and mosquitoes in the vicinity. The contact bed has been by-passed. The entire works are in a deplorable condition.

Walnut Grove. Inspected December 2, 1915. The influx of oriental labor to the vicinity has made necessary the building of large oriental quarters at this place. In addition to sanitary housing, a sewer system has been provided. In passing upon the disposal of the sewage the bureau recommended the construction of septic tanks, the effluent being pumped into the Sacramento River in one case and into Snodgrass Slough in the other.

Whittier. Inspected March 14, 1916. The sewage is passed through a septic tank close to a county road, the effluent being applied to a farm in the vicinity. The city has made plans for remodeling the tank along the two-story principle, the project receiving the tentative approval of the bureau.

Willows. Inspected March 28, 1916. The sewage has been passed through a septic tank, following which it runs through deep ditches, by-passing a 160-acre sewer farm owned by the city, onto marsh land below. Recent developments in this vicinity make the nuisance a serious factor and in all probability radical changes in the disposal will be necessary in the near future. The development of the rice industry in this vicinity has caused the bureau to suggest a high degree of purification of the sewage, following which it would form an ideal irrigating stream for rice farming.

Winters. Inspected and tested May 5 and 6, 1916. The sewage is clarified in an Imhoff tank of early design, being entirely covered with a concrete roof. The effluent is discharged directly into Putah Creek. On account of the considerable use of this stream for drinking purposes by fruit pickers and others in the vicinity, the bureau has demanded immediate discontinuance of the practice, suggesting utilization of land treatment in the vicinity, if the land can be obtained.

Yountville (Old Soldiers' Home). Inspected May 5, 1916. The sewage of this Home, serving about one thousand persons, is treated by passage through a septic tank, preceded by a large so-called equalizing tank, intended to bring about uniform detention in the septic tank. As a matter of fact, clarification is practically complete in the equalizing tank. The original design included also contact beds of unique design, the effluent being used for irrigation on alfalfa and garden truck. The contact bed has since fallen into disuse and the septic tank effluent is discharged directly onto alfalfa land. Recurring complaints reaching this office on odors resulted in an investigation. From the testimony it was not clear whether the odors emanated from the sewage disposal or from the decay of heavy algæ growths in the drainage ways in the neighborhood. The matter has been left in the hands of the complainants to locate with definiteness the source of the odor.

REPORT OF THE BUREAU OF FOODS AND DRUGS.

By E. J. LEA, M.S., Director.

The report of the Bureau of Foods and Drugs, herewith submitted, is the fifth biennial report of this bureau, and covers the period from July 1, 1914, to June 30, 1916.

A change in the personnel of this bureau was made July 1, 1915. Professor M. E. Jaffa, the pioneer food official in this state, resigned as director of the bureau, and Professor E. J. Lea was appointed to succeed him.

The inspection force was increased from five men to six men in August, 1915.

During the year ending June 30, 1915, 2,512 samples were analyzed, and 3,384 samples were analyzed during the year ending June 30, 1916, making a total of 5,896 samples for the biennial period.

The samples are classified as follows:

	Year ending June 30, 1915	Year ending June 30, 1916
Official samples—		
Foods	980	1,394
Drugs	380	271
Unofficial samples—		
Foods	112	424
Drugs	26	40
State institution	1,064	922
Cold storage		333
	2,512	3,384

The number of state institution samples during the second year of the biennial period is somewhat less than the number for the first year of the period. This is due to the fact that a change has been made in the system of bids. Formerly, each of the fifteen institutions submitted numerous samples with individual bids, but during the last year of the biennial period one set of samples was submitted for all institutions by the State Purchasing Agent, in accordance with the new system inaugurated by the State Board of Control.

This system of examination of samples for state institutions, as provided by the State Board of Control, has resulted in great improvement in the quality of food and other supplies delivered to the institutions. It has also resulted in a great financial saving to the state.

The list of samples given above includes very few milk samples, because the State Dairy Bureau in California is charged with the enforcement of the dairy laws of the state, and all of the larger cities have their own milk inspection departments.

In addition to cooperating with the State Board of Control and State Purchasing Agent, this bureau has also cooperated with the State Fish and Game Commission, state health officers and the United States Food Inspection Laboratory in San Francisco.

The work of this bureau has been greatly increased owing to the 1915 amendment to the cold storage act, which increased the number

of cold storage plants requiring supervision. The work of examining cold storage materials, which had been in storage for twelve months, in order to determine their fitness for further storage was also a considerable item.

The work and efficiency of this bureau has been materially increased by being able to quarantine decomposed food unfit for human consumption. Under the provisions of the general health laws, the State Board of Health authorized this bureau to exercise the power of quarantine whenever necessary to prevent the use of decomposed, filthy or putrid foods for human consumption.

During the fiscal year ending June 30, 1916, more than one million pounds of decomposed foods and food products were quarantined, condemned and destroyed.



A mainmoth egg omelet. In this fire are more than 200,000 frozen canned eggs and several tons of fish, meat and chili peppers, all condemned and destroyed by the California State Board of Health.

A large proportion of this destroyed material consisted of tomato products, such as tomato pulp, tomato puree, and tomato catsup which was made from decomposed and moldy stock. This material was entirely unfit for human consumption. Other large items were frozen egg meats, which were decomposed and rotten, and cold storage poultry. Besides these materials, a large number of miscellaneous foodstuffs in smaller amounts were condemned and destroyed; the details appear later in this report. Nearly all of this material was condemned and destroyed with the consent of the owners. In some cases, however, it was necessary to bring prosecutions in the courts and obtain an order of destruction from the judge.

This bureau has cooperated with several commercial associations, women's clubs and educational institutions by giving lectures on the particular features of the food and drug laws which were of special interest to them.

The California Wholesale Grocers Association, the California Retail Grocers Association, and the California Master Bakers Association deserve special mention. These organizations stand for pure, wholesome food products and they are a great source of assistance in enforcing the California food laws.

A number of newspapers in the state assist the work of this bureau by publishing articles concerning violations of the food and drug laws. Such publicity has a great educational value. It aids honest dealers, and some careless ones, by calling their attention to certain violations they may be committing themselves. The wilful violators are frequently checked by the publicity, and the information is of value to the general public, as it attracts attention to many articles which are either adulterated or mislabeled, thereby enabling the consumer to be more discriminating.

The courts of the state, generally speaking, render great assistance to this bureau. A large majority of our cases which were tried in court



Five days were required to haul the condemned foods, most of which consisted of decomposed frozen eggs, to an abandoned stone quarry, where they were burned.

resulted in conviction, although many of the dealers were placed on probation. In some localities, however, it is practically impossible to get a conviction on any kind of a charge. Political influence is usually responsible in such cases.

Four hundred and ninety-one cases were referred to district attorneys for prosecution in the courts, during this biennial period. About 90 per cent of these cases resulted in conviction; jail sentences were imposed in four cases. The court cases and fines for the two years are as follows:

	Year ending June 30, 1915	Year ending June 30, 1916
Cases referred to district attorneys.....	30	461
Fines imposed.....	\$170 00	\$6,021 00
Imprisonments.....		4

During the fiscal year ending June 30, 1916, a great deal of time was devoted to sanitary inspections. This work is exceedingly important. Many food producing establishments were found that were entirely unfit for the production or dispensing of food materials. In several cases it was necessary to quarantine the establishments until they could be put in a sanitary condition. This feature of the work requires a large number of inspectors, and in order to get good results it has often been necessary to secure the cooperation of health officers and local inspectors in the different cities.

A great improvement has been noted in the quality and labeling of both food and drug products in this state. The majority of dealers need only to have defects called to their attention in order to bring about satisfactory results. There are always a certain number, how-



In addition to 17,000 dozen spoiled eggs, there were 10,000 pounds of decomposed fish, and 5,000 pounds of catsup and chili peppers destroyed by this fire.

ever, who try to evade the food and drug laws, and because of these it is necessary to keep the field well covered by inspectors at all times. This is especially true in the case of perishable goods, such as meats, vegetables, condiments, fruit, etc. It is surprising to see how many people are willing to take a chance on selling unfit food.

The six inspectors of this bureau have done excellent work so far as they have gone, but in order to adequately cover a state of this size a much larger force will be required.

**OFFICIAL SAMPLES—FOODS AND FOOD PRODUCTS FOR THE FISCAL
YEARS ENDING JUNE 30, 1915, AND JUNE 30, 1916.**

Baking Powder.

Year ending June 30, 1915.

22 samples legal.	None illegal.	Total 22.
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There is no definite standard for baking powder in California. These samples ranged in available carbon dioxide from 10 to 13 per cent. Many of the samples were analyzed for the presence of arsenic, but none were found to contain more than the slightest trace of this material.

Year ending June 30, 1916.

2 samples legal.	None illegal.	Total 2.
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The two samples of baking powder analyzed were normal products, containing more than 10 per cent carbon dioxide.

Beverages.

Year ending June 30, 1915.

40 samples legal.	16 samples illegal.	Total 56.
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These samples included 23 brands of soda waters, ciders, ginger ales, fruit juices, etc. The principal violations consisted in the use of artificial flavors, artificial colors, and preservatives, without properly declaring such facts on the labels. Very few nonpermissible colors were found. The iron beer samples contained practically no iron. The apple cider samples were largely imitation products and contained practically no apple juice. The same is true of orangeade.

Nearly all of the so-called orangeade on sale in this state is made from water, citric or tartaric acid, sugar, orange extract, coal tar color and, in some cases, a preservative. Orangeade should consist of orange juice, sugar and water, with more or less orange peel for flavoring. If other materials are used, the product should be labeled "imitation orangeade."

Year ending June 30, 1916.

21 samples legal.	35 samples illegal.	Total 56.
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The comments made on the above samples of beverages for the year ending June 30, 1915, apply to these samples as well.

Butter.

Year ending June 30, 1915.

3 samples legal.	1 sample illegal.	Total 4.
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The illegal sample was rancid and under weight.

Year ending June 30, 1916.

2 samples legal.	2 samples illegal.	Total 4.
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The 2 illegal samples were rancid and unfit for human consumption.

Bread.

Year ending June 30, 1916.

3 samples legal.	1 sample illegal.	Total 4.
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The illegal sample of bread was labeled, "Butter Bread, Pure Creamery Butter Used," when in fact the sample contained only a mere trace of butter. The shortening consisted largely of cottonseed products.

Cereals.

Year ending June 30, 1915.

8 samples legal.	None illegal.	Total 8.
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These samples consisted of oat, wheat and corn preparations, which were true to name and in good condition.

Year ending June 30, 1916.

4 samples legal.	2 samples illegal.	Total 8.
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One of the illegal samples was infested with insects and one was falsely labeled.

Cheese.

Year ending June 30, 1915.

No samples legal.

1 sample illegal.

Total 1.

This sample of cottage cheese was deficient in butter fat. The label stated that the product was enriched with pure cream, whereas the sample contained only a slight trace of cream.

Year ending June 30, 1916.

2 samples legal.

3 samples illegal.

Total 5.

Two of the illegal samples were cottage cheese, labeled to indicate that they were enriched with pure cream, when in fact only a mere trace of cream was present. One sample of California cheese was deficient in butter fat.

Chocolate.

Year ending June 30, 1915.

1 sample legal.

3 samples illegal.

Total 4.

Three of these samples were either powdered cocoa or sweetened powdered cocoa, which were sold as chocolate.

Year ending June 30, 1916.

1 sample legal.

4 samples illegal.

Total 5.

These 4 illegal samples were deficient in chocolate fat.

Cocoa.

Year ending June 30, 1915.

No samples legal.

6 samples illegal.

Total 6.

All of these samples contained excessive mineral matter, due to processing.

Year ending June 30, 1916.

1 sample legal.

No samples illegal.

Total 1.

Coffee.

Year ending June 30, 1915.

7 samples legal.

2 samples illegal.

Total 9.

The two illegal samples were adulterated with chicory and roasted cereals.

Year ending June 30, 1916.

2 samples legal.

5 samples illegal.

Total 7.

The five illegal samples were adulterated either with chicory or cereal, or both.

Coffee Substitute.

Year ending June 30, 1916.

No samples legal.

1 sample illegal.

Total 1.

The label on this sample contained false and misleading statements.

Colors.

Year ending June 30, 1915.

8 samples legal.

1 sample illegal.

Total 9.

The illegal sample contained nonpermissible coal-tar color.

Condiments.

Year ending June 30, 1915.

35 samples legal.

23 samples illegal.

Total 58.

These samples were classified as follows:

- 1 Horseradish, legal.
- 1 Olives and pimento, legal.
- 1 Chili powder, adulterated with foreign material.
- 2 Prepared mustard, artificially colored with turmeric.
- 1 Sweet pickles, containing preservatives not declared on the label.
- 3 Sweet pickles, legal.
- 1 Plain pickles, legal.
- 1 Pickled cauliflower, legal.
- 1 Relish, containing a prohibited preservative—salicylic acid.
- 1 Relish, containing turmeric not declared.
- 1 Relish, containing benzoate of soda, not declared.
- 4 Relish, legal.
- 1 Salad dressing, legal.

- 1 Worcestershire sauce, containing excessive mold.
- 1 Worcestershire sauce, containing benzoate of soda not declared on label.
- 5 Worcestershire sauce, legal.
- 13 Tomato catsup, containing benzoate of soda, which was not declared on label.
- 17 Tomato sauce, legal.
- 1 Tomato puree, containing excessive mold.
- 1 Tomato puree, legal.

Year ending June 30, 1916.

47 samples legal. 266 samples illegal.

Total 313.

These samples were classified as follows:

- 2 Chowchow, legal.
- 2 Chowchow, illegal.
- 1 Chutney, legal.
- 1 Horseradish, legal.
- 1 Miscellaneous, illegal.
- 1 Prepared mustard, legal.
- 9 Prepared mustard, illegal.
- 2 Piccalilli, illegal.
- 2 Sweet pickles, legal.
- 3 Sweet pickles, illegal.
- 3 Sour pickles, legal.
- 15 Sour pickles, illegal.
- 9 Relish, legal.
- 2 Relish, illegal.
- 5 Miscellaneous sauce, legal.
- 5 Miscellaneous sauce, illegal.
- 4 Worcestershire sauce, legal.
- 2 Worcestershire sauce, illegal.
- 8 Tomato catsup, legal.
- 124 Tomato catsup, illegal.
- 9 Tomato mixture, illegal.
- 2 Tomato puree, legal.
- 6 Tomato puree, illegal.
- 7 Tomato pulp, legal.
- 73 Tomato pulp, illegal.
- 2 Tomato conserva, illegal.
- 1 Capers, legal.
- 7 Capers, illegal.
- 1 Onions, legal.
- 4 Onions, illegal.

By far the greater proportion of the above condiments were adulterated because they consisted in whole or in part of decomposed and filthy vegetable substance. The tomato products and some of the other materials contained excessive bacteria, yeast, spores and mold. In some instances benzoate of soda was used without being declared on the label, as required by law. The prepared mustard samples contained turmeric as a coloring matter and were adulterated with cereals. Many of the sour pickles were decomposed and unfit for human consumption. The Worcestershire sauce samples represented two large vats which contained much filth, such as dead flies and gnats, dust and dirt. These vats contained sufficient material to fill 32,000 bottles. It was all condemned and emptied into the sewer. The conserva samples were made by condensing tomato pulp which was badly decomposed. The onion samples represented several barrels of pickled onions which were rotten and unfit for human consumption. More than 2,000 barrels of tomato pulp, tomato puree and tomato catsup were condemned and destroyed under the supervision of this bureau during this fiscal year.

Confectionery.

Year ending June 30, 1915.

42 samples legal.

3 samples illegal.

Total 45.

These violations consisted of the use of coal tar colors to imitate natural products, and paraffin in chewing candy.

Year ending June 30, 1916.

19 samples legal.

6 samples illegal.

Total 25.

These violations consisted of the use of artificial colors to imitate natural products; glucose and brown sugars substituted for maple candy; paraffin in chewing candy, and spirituous liquor in chocolate candy.

Corn.

Year ending June 30, 1915.

5 samples legal.

1 sample illegal.

Total 6.

The illegal sample contained added cornstarch.

Corn.

Year ending June 30, 1916.

2 samples legal. 2 samples illegal. Total 4.
 The illegal samples contained added cornstarch.

Cream.

Year ending June 30, 1915.

1 sample legal. Total 1.

Eggs.

Year ending June 30, 1915.

No samples legal. 1 sample illegal. Total 1.
 This sample was sold as fresh eggs and upon examination was found to consist of stale and partially decomposed eggs.

Year ending June 30, 1916.

15 samples legal. 143 samples illegal. Total 158.

The egg samples consisted of eggs in the shell, and frozen egg meats. In nearly all cases of shell eggs, they were sold as fresh eggs and upon examination were found to consist of stale, decomposed or rotten eggs. In some instances as high as four or five in a dozen were rotten and in many cases from one to three in a dozen were rotten. Many dealers mixed storage and held eggs with fresh eggs while others sold cold storage and held eggs for fresh eggs without any fresh stock.

The samples of frozen egg meats were decomposed, moldy or rotten and represented over 65,000 pounds of this product. More than a dozen different dealers were involved. Two parties in Los Angeles made a business of buying cull eggs from commission houses at from 50 cents to \$1.00 per case. These eggs were broken into tin cans and frozen, after which they were sold to a certain class of bakers for pastry, etc. Some of the larger lots of these eggs came from China in the shell. They were held in San Francisco in cold storage for many months, at which time a large percentage of them had spoiled. The eggs were then broken into tin cans and frozen, and were calculated to be used for bakers' trade. These frozen eggs were all condemned and destroyed. In one instance more than 20,000 pounds were burned at one time, and it required one cord of wood and forty gallons of coal oil to accomplish this work. This fire also contained several tons of chili peppers and several tons of fish which were ready for destruction at the same time. In addition to the 65,000 pounds of frozen egg meats mentioned above there are 61,700 pounds being held pending court action.

Egg Substitutes.

Year ending June 30, 1915.

No samples legal. 4 samples illegal. Total 4.
 These samples were preparations of starch and gelatine artificially colored with coal tar dye.

Year ending June 30, 1916.

1 sample legal. 7 samples illegal. Total 8.
 The illegal samples were various mixtures of starch, gelatin, sugar, coal tar color and soap bark preparations. They were represented and sold as being fully equal to eggs. In no case did these adulterated samples have the properties of eggs or the nutritive value of eggs.

Extracts.

Year ending June 30, 1915.

29 samples legal. 44 samples illegal. Total 73.
 These samples are as follows:

Extract	Legal	Illegal	Total
Lemon	22	18	40
Wild cherry	1		1
Banana		2	2
Jamaica ginger	2	6	8
Peppermint		1	1
Pineapple		4	4
Raspberry flavoring		4	4
Strawberry flavor		2	2
Vanilla	4	5	9
Vanilla substitute		2	2

The illegal lemon extracts were largely deficient in lemon oil. Many samples contained less than 1-10 per cent. The banana extracts were artificially flavored and colored. Some of the illegal Jamaica ginger extracts were deficient in alcohol, some deficient in total solids, while in others the percentage of total solids soluble in alcohol and in water varied materially from the requirements. The peppermint extract was deficient in peppermint oil. The pineapple extracts were flavored and colored. The strawberry extracts were artificially flavored and colored. The illegal vanilla extracts contained coumarin, added vanilla and artificial coloring. The vanilla substitutes were mislabeled, because the word "substitute" was in such small and indistinct type that it could not be easily read.

Year ending June 30, 1916.

20 samples legal. 30 samples illegal. Total 50.

These samples are as follows:

Extract	Legal	Illegal	Total
Ginger		3	3
Lemon	11	12	23
Maple		1	1
Miscellaneous	1		1
Oil of pineapple		1	1
Orange	1		1
Peppermint	2	5	7
Raspberry		1	1
Strawberry		1	1
Vanilla	4	6	10
Imitation vanilla	1		1

In general, the comments made on the extract samples for the year ending June 30, 1915, apply to these samples.

Fish.

Year ending June 30, 1915.

7 samples legal. 4 samples illegal. Total 11.

The illegal samples were all salmon; three samples were mislabeled as to variety and the other sample was decomposed.

Year ending June 30, 1916.

4 samples legal. 1 sample illegal. Total 5.

The illegal sample consisted of dried shrimps which were decomposed and filthy.

Flour.

Year ending June 30, 1915.

6 samples legal. 1 sample illegal. Total 7.

The illegal sample was damaged and unfit for human consumption.

Year ending June 30, 1916.

8 samples legal. 2 samples illegal. Total 10.

The illegal samples were moldy and unfit for human consumption.

Fruits.

Year ending June 30, 1915.

11 samples legal. 2 samples illegal. Total 13.

The two illegal samples were canned peaches, which contained excessive tin.

Year ending June 30, 1916.

6 samples legal. 6 samples illegal. Total 12.

Two of the illegal samples were canned apples, short in weight; 1 sample of figs was decomposed and unfit for human consumption. Three samples of seeded raisins were decomposed, filthy and unfit for human consumption.

Gelatin.

Year ending June 30, 1915.

6 samples legal. Total 6.

Year ending June 30, 1916.

1 sample legal. Total 1.

Honey.

3 samples legal. Year ending June 30, 1916. Total 3.

Ice Cream.

27 samples legal. 12 samples illegal. Total 39.
The illegal samples were deficient in butter fat. The butter fat ranged from 4 per cent to 14 per cent.

Year ending June 30, 1916.
14 samples legal. 2 samples illegal. Total 16.
The illegal samples were deficient in butter fat.

Jams and Jellies.

Year ending June 30, 1915.
2 samples legal. 3 samples illegal. Total 5.
Two of the illegal samples were glucose jellies containing artificial coloring and flavoring, which were sold as genuine jelly. One sample labeled strawberry jelly was made largely from apple stock.

Year ending June 30, 1916.
4 samples legal. 5 samples illegal. Total 9.
The illegal samples contained coal tar color, artificial flavor and were made largely from apple stock instead of currant, raspberry and strawberry, as was indicated on the labels.

Lard.

Year ending June 30, 1916. Total 3.
3 samples legal.

Liquors.

Year ending June 30, 1915. Total 19.
6 samples legal. 13 samples illegal.
The illegal samples consisted of seven samples of absinthie, the sale of which is prohibited in California; two samples of beer, the labels on which were incorrect as to the kind of beer and place of manufacture; three samples of Creme de Menthe, containing a prohibited coal tar color, and one sample of wine labeled Orange Wine which was adulterated with a sugar and grape wine.

Year ending June 30, 1916. Total 75.
17 samples legal. 58 samples illegal.
These samples are classified as follows:

Liquor	Legal	Illegal	Total
Beer	1	5	6
Brandies		3	3
Cordials	2	9	11
Gin	5	27	32
Vermouth	3	11	14
Whiskey		1	1
Wines	5	2	7
Miscellaneous	1		1

The five illegal beer samples were mislabeled as to variety and the place of manufacture. The three brandy samples were adulterated with water. Eight of the illegal cordials were sold as blackberry cordials, but in fact were largely mixtures of wines which were flavored and sweetened. In some cases blackberry juice was used but the product did not conform to the standard given in the National Formulary. Most of the illegal gin samples consisted of cheap inferior bulk gin which had been placed in genuine imported gin bottles, of various high grade brands. Eleven samples of cheap inferior vermouth had been placed in imported vermouth bottles and sold as the genuine imported article. One sample of Whiskey was adulterated with water. Two samples of wine were diseased wines, unfit for human consumption.

Macaroons.

Year ending June 30, 1916.

No samples legal.

5 samples illegal.

Total 5.

These samples were all adulterated with wheat flour, some of them containing as high as 75 per cent of flour.

Meat and Meat Products.

Year ending June 30, 1915.

47 samples legal.

27 samples illegal.

Total 74.

These samples are classified as follows:

	Legal	Illegal	Total
Chopped meat	29	23	52
Pork sausage	11	3	14
Sausage, frankfurter, pork, beef.....	5	1	6
Mince meat	1	-----	1
Tamales	1	-----	1

The 23 samples of chopped meat contained a preservative which is prohibited in meats, namely, sodium sulphite. Three samples of pork sausage also contained sodium sulphite. One sample of frankfurter sausage contained coal tar dye in the meat.

Year ending June 30, 1916.

138 samples legal.

110 samples illegal.

Total 248.

These samples are classified as follows:

	Legal	Illegal	Total
Chopped meat and hamburger.....	82	65	147
Frankfurter sausage	23	29	52
Pork sausage	33	16	49

The 65 illegal samples of chopped meat contained the preservative, sodium sulphite, which is prohibited in meats. Twenty-nine samples of frankfurter sausage contained added cereal, which was not declared. Sixteen samples of pork sausage were adulterated either with sodium sulphite, cereals, or both.

Milk.

Year ending June 30, 1915.

6 samples legal.

2 samples illegal.

Total 8.

One sample of milk had been watered and one sample was labeled as tuberculin tested, when in fact it was not entitled to such distinction.

Milk (Evaporated).

Year ending June 30, 1915.

94 samples legal.

50 samples illegal.

Total 144.

The illegal samples were all below the required standards, either for solids or for fat.

Year ending June 30, 1916.

7 samples legal.

8 samples illegal.

Total 15.

Six of the legal samples were condensed skimmed milks which contained excessive bacteria. Some of these samples contained as high as 30,000,000 streptococci per cc. and 80,000,000 other bacteria. These samples were labeled Tulip Brand Condensed Skimmed Milk. Two samples of condensed milk were below the standard in solids.

Nuts.

Year ending June 30, 1916.

No samples legal.

4 samples illegal.

Total 4.

Three of these samples were walnut meats and consisted of rancid, decomposed, insect-infested material. The other sample was walnuts, in the shell, of the same quality. Two thousand one hundred seventy-five pounds of nut meats were condemned and destroyed.

Oils (Edible).

Year ending June 30, 1915.

7 samples legal.

1 sample illegal.

Total 8.

The illegal sample was labeled pure olive oil, whereas it consisted largely of cottonseed oil.

Year ending June 30, 1916.

5 samples legal.

1 sample illegal.

Total 6.

The illegal sample contained cottonseed oil, which had been substituted for olive oil.

Olives.

Year ending June 30, 1915.

10 samples legal.

Total 10.

Year ending June 30, 1916.

5 samples legal.

2 samples illegal.

Total 7.

The two illegal samples were decomposed and unfit for human consumption.

Pastes.

Year ending June 30, 1915.

1 sample legal.

10 samples illegal.

Total 11.

The illegal samples were all sold as egg noodles. Some of them contained no eggs at all and others contained less than the amount of eggs required by the standard.

Year ending June 30, 1916.

33 samples legal.

33 samples illegal.

Total 66.

The illegal samples consisted largely of egg noodles, the majority of which contained practically no eggs at all. Some samples did contain eggs, but less than required by the standard. Two samples of vermicelli were infested with insects and unfit for human consumption.

Pastry.

Year ending June 30, 1916.

5 samples legal.

2 samples illegal.

Total 7.

The two illegal samples were cake. The labels stated that they were made with pure butter, when in fact no butter was used.

Pastry Fillers.

Year ending June 30, 1915.

No samples legal.

4 samples illegal.

Total 4.

The labels on these samples contained statements which were false and misleading.

Year ending June 30, 1916.

1 sample legal.

3 samples illegal.

Total 4.

The illegal samples contained misleading and deceptive statements on the labels. The labels indicated that the products possessed the properties of eggs, when in fact the samples consisted largely of starch, gelatine, sugar, soapbark preparations, and coal tar color.

Rice.

Year ending June 30, 1915.

5 samples legal.

No samples illegal.

Total 5.

Salt.

Year ending June 30, 1916.

No samples legal.

1 sample illegal.

Total 1.

The label indicated that the salt was the purest and best on earth, but upon analysis this sample was found to contain 6.2 per cent of sodium sulfate.

Salt-peter.

Year ending June 30, 1916.

No samples legal.	1 sample illegal.	Total 1.
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This sample was analyzed and found to consist of Chili salt-peter.

Sirups—Table.

Year ending June 30, 1915.

4 samples legal.	7 samples illegal.	Total 11.
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The illegal samples consisted of sirups sold as maple. Most of these samples consisted entirely of cane sirup or cane and glucose sirup.

Year ending June 30, 1916.

3 samples legal.	8 samples illegal.	Total 11.
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The illegal samples in all cases consisted of cane or cane and glucose sirup sold as maple.

Sirups—Soda Water.

Year ending June 30, 1915.

5 samples legal.	49 samples illegal.	Total 54.
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The illegal samples consisted of sirups labeled Cherry, Creme de Menthe, Banana, Orange, Lemon, Raspberry and Strawberry. These samples were either artificially colored, artificially flavored, or both, without properly declaring these facts.

Soups.

Year ending June 30, 1916.

1 sample legal.	No sample illegal.	Total 1.
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Spices.

Year ending June 30, 1915.

71 samples legal.	9 samples illegal.	Total 80.
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The illegal samples were as follows: Four cinnamon, consisting of weak and exhausted material; two cloves, consisting of old, exhausted material; one mace, consisting of Bombay mace, an inferior, worthless variety, substituted for true mace; one mustard, consisting of old, exhausted material, and one nutmeg, adulterated with mustard hulls and pepper refuse.

Year ending June 30, 1916.

29 samples legal.	24 samples illegal.	Total 53.
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The illegal spices were as follows: Four allspice, consisting of weak, exhausted material; one red pepper, infested with mold and insects; two cinnamon, consisting of weak, exhausted material; four cloves, adulterated with foreign tissue, excessive clove stems, etc.; one ginger, consisting of inferior, exhausted material; three mace, consisting of Bombay mace, an inferior, worthless variety, substituted for true mace; eight mustard, some adulterated with cereals and colored with turmeric, and others infested with insects.

Sugar.

Year ending June 30, 1915.

10 samples legal.	1 sample illegal.	Total 11.
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The illegal sample was labeled maple sugar, when in fact it consisted almost entirely of brown cane sugar.

Year ending June 30, 1916.

1 sample legal.	No sample illegal.	Total 1.
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Vegetables (Dried and Canned).

Year ending June 30, 1915.

5 samples legal.	28 samples illegal.	Total 33.
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The illegal samples were as follows: One sample of canned beans, containing copper sulphate, the use of which is prohibited in foods; one sample of canned beans, labeled stringless beans; this can contained excessive tough strings; 28 samples of canned peas, containing copper sulphate, which is prohibited in foods.

Canned.

Year ending June 30, 1916.

3 samples legal.

7 samples illegal.

Total 10.

The illegal samples were as follows: One sample of string beans, colored with copper sulphate; one sample of canned hominy, decomposed and unfit for human consumption; three samples of canned peas, containing copper sulphate, the use of which is prohibited in foods; two samples of tomatoes, consisting of decomposed and filthy material, unfit for human consumption.

Vinegar.

Year ending June 30, 1915.

53 samples legal.

22 samples illegal.

Total 75.

The illegal samples were nearly all labeled cider vinegar. Many of these consisted of cheap, distilled vinegar artificially colored, while others consisted of cider vinegar adulterated with water. In some cases the vinegar had been diluted to 4 per cent acetic strength, without declaring this fact on the label, as required.

Year ending June 30, 1916.

27 samples legal.

15 samples illegal.

Total 42.

The illegal samples were all sold as cider vinegar, either made from diluted acetic acid with artificial coloring, or vinegar which had been adulterated with water.

Water.

Year ending June 30, 1915.

1 sample legal.

No sample illegal.

Total 1.

Year ending June 30, 1916.

No sample legal.

1 sample illegal.

Total 1.

This sample was so-called mineral water labeled "New Life Mineral Water," and represented as a very pure article. Analysis showed the presence of excessive *B. coli*, which rendered the water unfit for drinking purposes.

FOOD AND FOOD PRODUCTS—UNOFFICIAL SAMPLES.

Year ending June 30, 1915.

98 samples legal.

13 samples illegal.

Total 111.

Twenty-two of these unofficial samples were baking powders analyzed for the presence of arsenic. These samples were found to be remarkably free from arsenic, only a few samples showing even the smallest trace.

Twenty samples of water were analyzed chemically for health officers in various parts of the state. The total mineral salts in these samples were not excessive, although one sample from Huntington Park contained considerable magnesium sulphate. Six samples of water were analyzed for the Fish and Game Commission. Four of these samples were taken from the Salinas River and two of them contained hydrogen sulphide in sufficient quantity to be detrimental to fish.

The other samples are tabulated later in this report.

Year ending June 30, 1916.

195 samples legal.

229 samples illegal.

Total 424.

Two hundred and twenty-four unofficial samples of condiments were analyzed and 58 passed; 166 were decomposed, filthy and unfit for human consumption. These samples were taken from large stocks of goods in possession of certain factories. These samples represent large lots of tomato products and other condiments which were quarantined and which the owners were required to carefully sort. The bad material was condemned and destroyed before the edible material could be used. These condiments include tomato pulp, tomato catsup, Worcestershire sauce, sweet and sour pickles, pickled onions, olives, chowchow, and sauces.

The 26 samples of flour represent two cargoes of damaged flour which became moldy. Most of this flour was suitable for use after rebolting. Certain small lots were not suitable for human consumption. These lots were sold for hog feed.

The other unofficial samples are listed later in this report.

DRUGS—OFFICIAL.

For the Fiscal Years Ending June 30, 1915 and June 30, 1916.

During the fiscal year ending June 30, 1915, 380 official samples of drugs were analyzed; 118 of these were passed, and 262 were illegal.

During the fiscal year ending June 30, 1916, 271 official samples were analyzed; 124 samples were passed and 147 were illegal.

The drug stores throughout the state have very largely eliminated mislabeled patents, and with comparatively few exceptions, their stocks are in excellent condition. There are still some druggists, however, who are careless in making preparations, and some who buy supplies without a guaranty. Many druggists might have avoided prosecution had they taken the simple precaution of obtaining guaranties for all supplies they purchase.

The official drug samples for the biennial period are as follows:

Ammonia, Aromatic Spirits of.

Year ending June 30, 1915.		
16 samples legal.	127 samples illegal.	Total 143.
Year ending June 30, 1916.		
3 samples legal.	12 samples illegal.	Total 15.

These samples ranged from slightly above standard to 80 per cent below standard strength. The samples classed as illegal were all more than 30 per cent below the required standard.

Experiments in this laboratory show that aromatic spirits of ammonia can be kept one year with a loss of only 5.5 per cent of its original strength. A five-pint bottle of aromatic spirits of ammonia was prepared on September 14, 1914. This bottle was kept in the laboratory at ordinary room temperature and opened each week during one year, for the purpose of drawing samples for analysis. On October 1, 1915, the sample had lost only 5.5 per cent of its original strength. Similar results were obtained on other samples.

Many druggists have complained that it is impossible to make aromatic spirits of ammonia so that it will keep. On the other hand, a great many druggists do make this preparation, which keeps in a perfectly satisfactory manner, and results of experiments in this laboratory and elsewhere show conclusively that this preparation can be made and kept in a practical way if care is exercised in the selection of ingredients, and the directions of the Pharmacopoeia are carefully carried out.

Arnica.

Year ending June 30, 1915.		
3 samples legal.	No sample illegal.	Total 3.

Asafoetida Po.

Year ending June 30, 1915.		
No sample legal.	1 sample illegal.	Total 1.

This sample was analyzed and found to contain excessive mineral matter as a make-weight.

Aspirin.

Year ending June 30, 1916.		
67 samples legal.	43 samples illegal.	Total 110.

The illegal aspirin samples were composed of various mixtures of starch, milk, sugar and tartaric acid. Some of these illegal samples, in the form of tablets, contained genuine aspirin but were short in weight owing to the use of excessive filler. The majority of the samples, however, contained very little, or no, aspirin at all. Some of the supplies of this fake aspirin were shipped into this state from Indianapolis, usually by express, in unlabeled packages. Many dealers were convicted and fined for selling this adulterated drug.

Mr. B. S. Levin of Los Angeles was charged with selling fake aspirin to three druggists in San Jose. One case was tried and Mr. Levin was convicted by a jury. The defendant was fined \$500, and was given a jail sentence of six months, both of which are the maximum under the California Pure Drugs Act. Mr. Levin appealed the case to the superior court, and lost. The fine was paid and Mr. Levin is now in the county jail serving his term. In passing sentence the judge took into consideration the fact that Mr. Levin had swindled a great many druggists throughout the state, many of whom had been fined in court for selling the drugs bought from him.

Bitters.

	Year ending June 30, 1915.	
1 sample legal.	No sample illegal.	Total 1.
	Year ending June 30, 1916.	
No sample legal.	1 sample illegal.	Total 1.
One sample analyzed and found illegal; alcohol not being declared.		

Boneset.

	Year ending June 30, 1915.	
1 sample passed.	1 sample illegal.	Total 2.
The illegal sample was infested with insects and unfit for use.		

Camphor Compounds.

	Year ending June 30, 1915.	
35 samples legal.	19 samples illegal.	Total 54.
	Year ending June 30, 1916.	
25 samples legal.	25 samples illegal.	Total 50.
These samples were mostly camphorated oil and spirits of camphor. Some of the camphorated oils contained as low as 7 per cent of camphor. Some of the camphorated oils contained as low as 7 per cent of camphor when they should have contained 20 per cent. The illegal spirits of camphor samples were deficient in camphor.		

Catarrh Cures.

	Year ending June 30, 1915.	
No sample legal.	1 sample illegal.	Total 1.
This sample was analyzed and found illegal. The claims made on the label were false and fraudulent.		

Cold Tablets.

	Year ending June 30, 1915.	
1 sample legal.	No sample illegal.	Total 1.

Consumption Remedies.

	Year ending June 30, 1916.	
1 sample legal.	No sample illegal.	Total 1.

Corn Remedies.

	Year ending June 30, 1915.	
2 samples legal.	1 sample illegal.	Total 3.
	Year ending June 30, 1916.	
1 sample legal.	No sample illegal.	Total 1.
One illegal sample contained ether, not declared on the label, and the label contained false claims.		

Cough Cure.

	Year ending June 30, 1915.	
1 sample legal.	2 samples illegal.	Total 3.
The illegal samples contained morphine, not declared on the label, and these labels bore false and fraudulent claims regarding the therapeutic properties.		

Digitalis, Tr.

	Year ending June 30, 1915.	
5 samples legal.	No samples illegal.	Total 5.

Gin.

	Year ending June 30, 1916.	
No samples legal.	4 samples illegal.	Total 4.
The labels on these samples contained false and fraudulent statements.		

Ginger, Essence.

Year ending June 30, 1915.		
1 sample legal.	1 sample illegal.	Total 2.
Year ending June 30, 1916.		
1 sample legal.	11 samples illegal.	Total 12.
The illegal samples were all deficient in strength.		

Hair Tonic.

Year ending June 30, 1915.		
No samples legal.	1 sample illegal.	Total 1.
Year ending June 30, 1916.		
No samples legal.	2 samples illegal.	Total 2.
The illegal samples were mislabeled on account of having false and extravagant claims in regard to their therapeutic effects. One of these samples was labeled "Hair-A-Gain," which would be interpreted by the ordinary purchaser to mean that the preparation would produce hair where it had ceased to grow. The statements on the label would also bear out this interpretation. The manufacturer, however, stated that the term, Hair-A-Gain, meant that if one has hair it is a gain in appearance and comfort.		

Iodine, Tr.

Year ending June 30, 1915.		
2 samples legal.	2 samples illegal.	Total 4.
Year ending June 30, 1916.		
11 samples legal.	3 samples illegal.	Total 14.
The illegal samples were all deficient in strength; some contained no potassium iodide, while others were deficient in both potassium iodide and iodine.		

Magnesia, Citrate of.

Year ending June 30, 1915.		
2 samples legal.	2 samples illegal.	Total 4.
Year ending June 30, 1916.		
2 samples legal.		Total 2.
The illegal samples were not made in accordance with the U. S. Pharmacopoeia.		

Miscellaneous Remedies.

Year ending June 30, 1915.		
8 samples legal.	10 samples illegal.	Total 18.
Year ending June 30, 1916.		
8 samples legal.	12 samples illegal.	Total 20.

The illegal samples consisted of patent tonics, toothache drops, rheumatism remedies, skin remedies, etc., which contained false and fraudulent claims on the labels.

Nitre, Sweet Spirits of.

Year ending June 30, 1915.		
18 samples legal.	90 samples illegal.	Total 108.
Year ending June 30, 1916.		
3 samples legal.	18 samples illegal.	Total 21.

The illegal samples, in each case, were more than 30 per cent below the standard strength; some of them being as much as 75 per cent below standard strength.

Many druggists complained, as in the case of aromatic spirits of ammonia, that sweet spirits of nitre could not be prepared and kept a reasonable length of time without excessive deterioration. However, a great many other druggists do prepare this preparation properly and have no difficulty in keeping it.

This laboratory prepared a large number of samples of sweet spirits of nitre on November 12, 1914. These samples were in 2-ounce amber bottles with rubber stoppers, and were kept in a dark room. One sample was analyzed each week until October 1, 1915, when the stock was exhausted. On this date the samples showed on analysis, 3.91 per cent ethyl nitrite, or a loss of .09 per cent of ethyl nitrite, which is only 3.21 per cent of the total strength. Other laboratories have had similar results in the keeping of this article and there appears to be no difficulty in keeping nitre if the ingredients are of the proper quality, and the preparation is properly made. It is important to have the alcohol neutral.

Nux Vomica.

Year ending June 30, 1915.

No samples legal.	3 samples illegal.	Total 3.
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These samples were deficient in strength.

Oils.

Year ending June 30, 1916.

2 samples legal.	8 samples illegal.	Total 10.
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The illegal samples consisted of:

1 sample castor oil, adulterated with a foreign oil.

4 samples of sweet oil, adulterated with cottonseed oil.

1 sample olive oil, adulterated with cottonseed oil.

1 sample aromatic castor oil, mislabeled as to manufacturer.

1 sample labeled—"New Life Oil—Greatest of all blessings; cures the sick—old and infant the same," etc., etc. The label on this sample contained many false and fraudulent statements.

Paregoric.

Year ending June 30, 1915.

2 samples legal.	1 sample illegal.	Total 3.
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The illegal sample contained opium, which was not declared on the label.

Peppermint, Essence.

Year ending June 30, 1915.

1 sample legal.	7 samples illegal.	Total 8.
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The illegal samples were deficient in peppermint oil.

Salts, Epsom.

Year ending June 30, 1915.

20 samples legal.	No samples illegal.	Total 20.
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Unofficial Drug Samples.

Year ending June 30, 1915.

15 samples legal.	11 samples illegal.	Total 26.
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Year ending June 30, 1916.

22 samples legal.	18 samples illegal.	Total 40.
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These illegal samples consisted of aspirin, cancer remedies, consumption remedies, tonics, kidney remedies, etc., the labels of which contain false and fraudulent claims.

STATE INSTITUTION SAMPLES. FOODS AND OTHER SUPPLIES FOR THE FISCAL YEARS ENDING JUNE 30, 1915, AND JUNE 30, 1916.

The State Board of Control inaugurated a system of checking the quality of supplies for state institutions. This was found necessary on account of abuses which they discovered in connection with deliveries to institutions. In former years it was not uncommon for dealers to submit an excellent sample of goods with their bid; later on when deliveries were made to the institution, a great many instances were found in which vastly inferior goods were supplied.

The present system includes detailed specifications and, wherever necessary, submission of samples with the bids. When the deliveries are made samples of the deliveries are submitted to the State Food and Drug Laboratory for analysis and examination, in order to compare such deliveries with the original bid samples.

This system has resulted in a wonderful improvement in the quality of supplies received at state institutions and has also resulted in a great saving of money to the state. During the fiscal year ending June 30, 1915, 1064 samples were analyzed and examined for the State Board of Control and for state institutions; 188 of these samples did not conform to specifications.

During the fiscal year ending June 30, 1916, 922 samples were analyzed or examined; 285 of these samples did not conform to specifications. Fewer samples appear for this year on account of the change in system. Formerly each institution submitted a complete set of bid samples while in this period one set only of bid samples for all institutions was analyzed. This system was adopted when the State Purchasing Department was inaugurated. The samples analyzed during these two fiscal years are as follows:

STATE INSTITUTION SAMPLES.

Year ending June 30, 1915.

Ammonia. One of the three samples analyzed was found materially deficient in strength.

Baking Powder. Two of the eleven samples analyzed were materially deficient in strength.

Baking Soda. Six samples were found pure.

Blankets. Fifty-three out of 159 samples contained excessive cotton, some samples containing more than 60 per cent cotton, while the specifications stated not more than 30 per cent.

Butter. Three of the five samples of butter analyzed were inferior in quality. The shipments represented by these samples were rejected.

Cereals. Thirteen samples were analyzed and passed.

Chocolate and Cocoa. Eight samples were analyzed and passed.

Cocoanut. One of the three samples analyzed was an inferior product and was rejected.

Coffee. Forty-four of the 182 samples analyzed did not meet with the requirements. The majority of these samples were among the samples submitted on bids and do not represent deliveries to institutions.

Coffee Substitutes. Twenty-six samples were analyzed and passed.

Condiments. Thirteen samples of catsups, sauces, etc., were examined and passed.

Cloth. Five samples of cloth for uniforms, etc., were analyzed and passed.

Cream of Tartar. Five samples were analyzed and passed.

Cream of Tartar Substitute. Four samples were analyzed and passed.

Cutlery. Twenty-two samples were analyzed and passed. These samples contained at least 10 per cent nickel in the blanks and conformed to specifications.

Eggs. Five of the seven samples of eggs analyzed did not meet requirements. The deliveries represented by these samples were rejected.

Extracts. Two of the eighteen samples analyzed were below specifications in strength and were rejected.

Fish. Two samples were analyzed and passed.

Flour. One sample of the twenty-one samples analyzed was below the requirements.

Fruit. Six samples were analyzed and passed.

Gelatine. Two samples were analyzed and passed.

Hair, curled. Six samples were analyzed and passed.

Jams and Jellies. Three samples were analyzed and passed.

Lard. One of the two samples analyzed was adulterated with cottonseed products.

Liquors. Three samples were analyzed and passed.

Leather. Five samples were analyzed and passed.

Oils, edible. Thirty-nine samples were analyzed and passed.

Oils, mineral and lubricating. One of the eighteen samples analyzed did not conform to specifications.

Pastes. Fifteen samples were analyzed and passed.

Rice. Three of the twenty-seven samples analyzed were coated with talc and glucose.

Salt. Four samples were analyzed and passed.

Soaps. Sixty-one samples of laundry soap, sand soap, toilet soap and liquid soaps were analyzed; thirty of these samples contained either excessive water or excessive filler, or both.

Soap Powders. One of the nine samples analyzed did not meet the specifications.

Syrups, table. Two of the ten samples analyzed did not meet the specifications.

Spices. Nine of the ninety-one samples analyzed were inferior in quality and were rejected.

Starch. Six samples were analyzed and passed.

Sugar. Two of the twelve samples did not meet the requirements of the specifications.

Tea. Twenty-two of the 163 samples analyzed did not meet the requirements of the specifications. Nearly all of these samples were included in the bid samples and did not represent deliveries to institutions.

Vegetables, canned. Two of the thirty-one samples did not conform to specifications.

Vinegars. Three of the twenty-six samples were adulterated and were rejected.

Year ending June 30, 1916.

Ammonia. Seven of the eight samples analyzed were deficient in strength, some of the samples containing not more than 20 per cent of the required strength.

Baking Powder. One sample was analyzed and passed.

Baking Soda. Two samples were analyzed and passed.

Baking Powder Phosphate. One sample was analyzed and passed.

Blankets. Twenty-six of the seventy-three samples analyzed did not conform to specifications. These samples contained excessive cotton.

- Butter.** Seven samples were analyzed and passed.
- Cereals.** Four of the twenty-eight samples analyzed did not meet with the specifications. These samples were infested with weevil.
- Cheese.** One of the ten samples did not conform to specifications—inferior in quality.
- Chloride of Lime.** One of the two samples did not conform to specifications.
- Chocolate and Cocoa.** One of the nine samples did not conform to specifications; this was a sample labeled ground chocolate which consisted of cocoa.
- Chrome.** Two samples were analyzed and passed.
- Coffee.** Fourteen of the forty-one samples analyzed did not conform to specifications.
- Coffee Substitute.** Nine samples were analyzed and passed.
- Condiments.** Six of the seventeen samples did not conform to specifications; these samples consisted of catsups, sauces, etc., containing excessive bacteria and mold.
- Corn.** Three samples analyzed and passed.
- Cream of Tartar.** Four samples analyzed and passed.
- Eggs.** Five of the fourteen samples analyzed did not conform to specifications; the shipments represented by these samples were rejected.
- Extracts.** Thirteen samples analyzed and passed.
- Fish.** Six samples analyzed and passed.
- Fed.** Five samples analyzed and passed.
- Flour.** Seven of the forty-four samples analyzed did not conform to specifications; these samples were deficient in protein and some contained excessive mineral matter. The specifications call for not less than 10.5 per cent of protein, while some of these samples ran below 8 per cent protein.
- Fruit.** Three of the fourteen samples did not conform to specifications. These samples consisted of an inferior decomposed fruit.
- Gelatine.** Two samples were analyzed and passed.
- Hair, curled.** Six samples were analyzed and passed.
- Inks.** One of the nineteen samples analyzed did not conform to specifications.
- Jams and Jellies.** Two samples analyzed and passed.
- Lard.** One of the four samples analyzed did not conform to specifications; this sample contained cottonseed products.
- Leather.** Forty-four of the ninety samples analyzed did not conform to specifications; these samples contained excessive filler, such as glucose and mineral matter. The mineral fillers consisted of barium sulphate and magnesium sulphate.
- Liquors.** Seventeen samples were analyzed and passed.
- Lye.** One sample analyzed and passed.
- Meats.** One sample analyzed and passed.
- Milk.** One of the two samples analyzed was below standard.
- Miscellaneous Materials.** Seven samples examined and passed.
- Oils, edible.** Fifty-five samples were analyzed and passed.
- Pastes.** Three samples were analyzed and passed.
- Rice.** Two of the twenty-three samples analyzed were coated with glucose and mineral matter.
- Sago.** One sample analyzed and passed.
- Salt.** One of the eight samples analyzed did not conform to specifications.
- Syrups, table.** Eighteen of the forty samples analyzed did not conform to specifications; these samples contained excessive mineral matter in some cases and in others were deficient in sugar.
- Soaps.** Eighty-five of the 149 samples analyzed did not conform to specifications; these samples contained either excessive water or excessive filler, or both.
- Soap Chips.** Eighteen of the twenty-two samples analyzed did not conform to specifications; these samples contained excessive water or excessive filler, or both.
- Washing Powder.** Six of the eight samples analyzed did not conform to specifications.
- Spices.** Five of the forty-three samples analyzed were inferior in quality.
- Starch.** Five samples were analyzed and passed.
- Sugar.** Ten samples were analyzed and passed.
- Tea.** Seventeen of the forty samples of teas analyzed did not meet the requirements.
- Vegetables.** One of the nine samples analyzed did not conform to specifications. This was a sample of canned stringless beans, which contained excessive and tough strings.
- Vinegar.** Nine of the forty-two samples analyzed did not conform to specifications. Some of these samples consisted of imitation vinegar artificially colored and others consisted of cider vinegar adulterated with water.

DECOMPOSED FOOD CONDEMNED AND DESTROYED.

Year ending June 30, 1916.

Almonds	25	pounds
Anchovies	1	barrel
Butter	175	pounds
Cake mixture	4	packages
Cakes, small	2	packages
Cauliflower	22	barrels
Chickens	6	only
Chili pulp	200	gallons
Chopped meat	30	pounds
Codfish	20	pounds
Condiments	100	pounds
	15	jars
	29	bottles
Corn meal	700	pounds
Cranberries	1	barrel
Currants	34	pounds
Dill weed	7	bottles
	3	casks
Egg noodles	47	packages
Figs	448	packages
Flour	1,000	pounds
Hominy	54	pounds
Ice cream	4	gallons
Jelly	65	pounds
Miscellaneous canned goods	5,516	items
Miscellaneous cereals	445	packages
	122	gallons
Olives	94	bottles
Onions	14	barrels
Onion sauce	1	barrel
Peanuts	5	barrels
Pears	5,700	pounds
Peppers	220	gallons
	7	casks
	262	bottles
Pickles	55	barrels
Pork	25	pounds
Raisins	204	packages
	3	barrels
Relish, Mexican hot	1	case
Relish, sweet	1	barrel
Sauce	100	gallons
Sauerkraut	7,020	pounds
Shells, paste	38	packages
Shrimps	250	pounds
	50	pounds
Spices	42	packages
Syrup	34	barrels
Tomato—		
Catsup	21,231	bottles
Pulp	42	kegs
Tripe	2,008	barrels
Vermicelli	100	pounds
Vinegar	377	pounds
Walnuts	276	gallons
Worcestershire sauce	5	pounds
	16	barrels

COLD STORAGE GOODS CONDEMNED AND DESTROYED FOR THE
YEAR ENDING JUNE 30, 1916.

Abalone	100	pounds
Butter	600	pounds
Cheese	6	cases
Chickens	4,281	pounds
Chili peppers	2,450	pounds
Cranberries	72	pounds
Eggs	460	dozen
Egg meats, frozen	65,874	pounds
Fish	7,800	pounds
Frogs	17	pounds

COLD STORAGE GOODS CONDEMNED AND DESTROYED.—Continued.

Grapes	600 pounds
Lemon peel	4 tubs
Livers	159 pounds
Loganberries	10 boxes
Meats	100 pounds
Peanut meats	675 pounds
Persimmons	40 pounds
Pork	285 pounds
Poultry	2,000 pounds
Shrimps	1,100 pounds
Strawberries	110 boxes
Sweetbreads	1,898 pounds
Turkeys and other poultry	9,334 pounds
Walnut meats	1,500 pounds

MATERIALS IN COLD STORAGE.

During the Year July 1, 1915, to June 30, 1916.

Quarter ending December 30, 1915.

Butter	3,457,218 pounds
Cheese	2,300,623 pounds
Condiments	115,771 pounds
Confectionery	3,640 pounds
Eggs—	
Dried	1,500 pounds
Frozen	1,000,023 pounds
In shell	5,465,220 dozen
Fish—	
Dried	386,263 pounds
Fresh	118,047 pounds
Pickled	357,700 pounds
Shell fish	118,000 pounds
Flour	450 pounds
Fruits—	
Apples	234,982 boxes
Berries	26 barrels
Berries	26 chests
Berries	91,745 pounds
Cantaloupes	40 crates
Dates	4,368 pounds
Grapes	7,602 pounds
Oranges	5,084 boxes
Peaches	3,590 boxes
Peaches	646,494 pounds
Pears	452 boxes
Pears	201,393 pounds
Plums and prunes	3,077 boxes
Plums and prunes	84 pounds
Raisins and figs	4,702 boxes
Miscellaneous	5,740,603 pounds
Miscellaneous	305 boxes
Liquor—	
Beer	260 barrels
Meats, sausages, etc.	900,551 pounds
Milk, dried	97,115 pounds
Miscellaneous materials—	
Leaves, mushrooms, popcorn, plants, roots, etc.	1,779,839 pounds
Nut meats	412,924 pounds
Oil, salad	8 barrels
Poultry	784,838 pounds
Syrups	6 barrels
Vegetables—	
Peppers	12 bales
Miscellaneous	4,637,016 pounds
Vinegar	1,350 gallons

Quarter ending December 31, 1915.

Butter	1,605,516 pounds
Cheese	2,000,698 pounds
Condiments	367 pounds
Confectionery	1,413 pounds
Eggs—	
Dried	1,100 pounds
Frozen or canned	507,440 pounds
In shell	465,075 dozen

MATERIALS IN COLD STORAGE—Continued.

Fish—		
Dried	208,031	pounds
Fresh	182,898	pounds
Pickled	323,920	pounds
Shell	4,400	pounds
Flour or meal	4,275	pounds
Fruits—		
Apples	306,400	boxes
Apples	7,327,800	pounds
Berries	415,207	pounds
Berries	90	cases
Berries	1	keg
Figs	8	boxes
Grapes	6,111	pounds
Grapes	565	boxes
Grapes	3	drums
Oranges	291	cases
Oranges	1,023	pounds
Peaches	35	cases
Peaches	3,641	pounds
Pears	135,749	pounds
Pears	36	boxes
Plums and prunes	5,420	pounds
Plums and prunes	14	boxes
Persimmons	8,385	pounds
Persimmons	187	boxes
Raisins	30	cases
Miscellaneous and unclassified	13,010,805	pounds
Lard	105	pounds
Liquor—		
Beer	230	barrels
Meats—		
Beef, pork, veal, mutton, sausages, etc.	3,980,856	pounds
Milk, dried	23,310	pounds
Miscellaneous materials—		
Leaves, bulbs, tobacco, oleomargarine, etc.	18,798	pounds
Nuts—		
Meats	121,683	pounds
Miscellaneous	2,212	pounds
Oil, salad	10	barrels
Poultry	109,650	pounds
Syrups	5	barrels
Vegetables—		
Peppers	58	cases
Potatoes	600	sacks
Miscellaneous	12,037,884	pounds

Quarter ending March 31, 1916.

Beverages—		
Cider	11	barrels
Butter	365,768	pounds
Cheese	964,108	pounds
Condiments	88,948	pounds
Confectionery	5,483	pounds
Eggs—		
Frozen	68,737	pounds
In shell	1,975,230	dozen
Fish—		
Dried	440,538	pounds
Pickled	333,400	pounds
Shell	1,900	pounds
Flour	250	pounds
Fruits—		
Apples	187,221	boxes
Berries	14,812	pounds
Grapes	510	pounds
Oranges	3,700	boxes
Pears	8,720	pounds
Miscellaneous	3,689,599	pounds
Lard	145,350	pounds
Liquor—		
Beer	310	barrels
Meats, sausages, etc.	4,258,811	pounds
Miscellaneous materials—		
Leaves, bulbs, mushrooms, etc.	74,405	pounds

MATERIALS IN COLD STORAGE—Concluded.

Nuts—		
Meats	300,706	pounds
Miscellaneous	2,544	pounds
Oil, salad	1,600	pounds
Poultry	830,978	pounds
Syrups, fountain	3,045	pounds
Sugar, maple	50	pounds
Vegetables—		
Potatoes	657	sacks
Potatoes	6,348	boxes
Celery	438	crates
Lettuce	358	crates
Sweet potatoes	15	crates
Miscellaneous	3,444,115	pounds

Quarter ending June 30, 1916.

Butter	1,641,018	pounds
Cheese	1,597,338	pounds
Condiments	89,900	pounds
Confectionery	5,483	pounds
Eggs—		
Dried or powdered	940	pounds
Frozen	431,630	pounds
In shell	4,455,750	dozen
Fish—		
Dried	442,801	pounds
Pickled	358,550	pounds
Shell	19,500	pounds
Fruits—		
Apples	7,828	boxes
Berries	66,020	pounds
Dates, figs, raisins	3,800	pounds
Grapes	680	pounds
Oranges	9,100	pounds
Peaches	14,520	pounds
Pears	25,550	pounds
Miscellaneous	468,886	pounds
Lard	698	pounds
Liquor—		
Beer	301	barrels
Meats and sausages	1,005,161	pounds
Miscellaneous materials—		
Mushrooms, leaves, etc.	5,465	pounds
Nuts—		
Meats	658,236	pounds
Miscellaneous	3,530	pounds
Poultry	493,183	pounds
Vegetables—		
Potatoes	1,078	sacks
Miscellaneous	76,540	pounds

The California Cold Storage Act permits the storage of food products for a period of twelve months. If further time is desired owners are required to make application for an extension of time. The goods are then examined by the State Board of Health, and if found in suitable condition, further extension is granted.

In all of the cases listed below the goods were in excellent condition and for this reason the time was extended as indicated.

List of Extensions of Time Granted for Materials in Cold Storage.

Material	Amount	Locality	Extension granted
Butter	1,560 pounds	San Francisco	9 months
Butter	3,600 pounds	San Francisco	7 months
Cheese	93 drums	Los Angeles	1 year
Cheese	54 cases	San Francisco	5 months
Cheese	12 cases	San Francisco	6 months
Cheese	462 pounds	San Francisco	6 months
Cheese	1,050 pounds	San Francisco	3 months
Cheese	900 pounds	San Francisco	6 months
Cheese	110 sacks	San Francisco	1 year
Cheese	604 pounds	San Francisco	6 months
Cheese	510 pounds	San Francisco	1 year
Cheese	1,300 pounds	San Francisco	8 months
Cheese	185 pounds	San Francisco	10 months
Cheese	7,875 pounds	San Francisco	6 months
Cheese	17,706 pounds	San Francisco	1 year
Cheese	20,367 pounds	San Francisco	1 year
Cheese	9,628 pounds	San Francisco	5 months
Cheese	399 pounds	San Francisco	5 months
Cheese	22,926 pounds	San Francisco	1 year
Cheese	23,086 pounds	San Francisco	7 months
Cheese	1,800 pounds	San Francisco	7 months
Cheese	4,060 pounds	San Francisco	10 months
Cheese	6½ dozen	San Francisco	6 months
Cheese	4½ cases	San Francisco	1 month
Cheese	129 Fardeaux	San Francisco	1 year
Cheese	15 tubs	San Francisco	1 year
Cheese	85 sacks	San Francisco	1 year
Cheese	151 cases	San Francisco	1 year
Cheese	112 cases	San Francisco	1 year
Cheese	125 sacks	San Francisco	1 year
Cheese	6 sacks	San Francisco	3 months
Eggs, dried	400 pounds	San Francisco	6 months
Eggs, frozen meats (in cans)		San Francisco	1 year
Eggs, frozen meats (in cans)	14,920 pounds	Los Angeles	4 months
Eggs, frozen meats (in cans)	1,724 pounds	Oakland	3 months
Fish—			
Anchovies	20½ dozen	San Francisco	1 year
Anchovies	50 dozen	San Francisco	1 year
Anchovies	10 barrels	San Francisco	6 months
Anchovies	9½ barrels	San Francisco	6 months
Anchovies	133½ dozen	San Francisco	1 year
Anchovies	80 dozen	San Francisco	1 year
Anchovies	46½ barrels	San Francisco	1 year
Appetit mild	21 cases	San Francisco	1 year
Caviar	2 cases	San Francisco	1 year
Caviar	3 cases	San Francisco	1 year
Odffish	78/100 pounds	San Francisco	6 months
Odffish	78/100 pounds	San Francisco	6 months
Odffish	10 boxes	San Francisco	1 year
Odffish	8 cases	San Francisco	1 year
Odffish	4 cases	San Francisco	1 year
Odffish	1 case	San Francisco	1 year
Eels, smoked	11 cases	San Francisco	10 months
Eels, pickled	7 boxes	San Francisco	2 months
Eels, pickled	10 dozen	San Francisco	6 months
Eels, pickled	20 crates	San Francisco	6 months
Eels, pickled	50 cases	San Francisco	1 year
Finnan haddie	500 cases	San Francisco	1 year
Fish in tins	4 cases	San Francisco	1 year
Herring	4 cases	San Francisco	1 year
Herring	4 cases	San Francisco	1 year
Herring	200 crates	San Francisco	1 year
Herring	286 crates	San Francisco	1 year
Herring	160 barrels	San Francisco	1 year
Herring	77 barrels	San Francisco	1 year
Herring	26 half bbls.	San Francisco	6 months
Herring	290 crates	San Francisco	1 year
Herring	57 kegs	San Francisco	1 year
Lobsters	31 cases	San Francisco	1 year
Lobsters	175 cases	San Francisco	1 year

List of Extensions of Time Granted for Materials in Cold Storage—Continued.

Material	Amount	Locality	Extension granted
Lobsters	75 cases	San Francisco	1 year
Mackerel, salt	3 barrels	San Francisco	10 months
Mackerel, salt	56 barrels	San Francisco	1 year
Mackerel, salt	3 barrels	San Francisco	1 year
Mackerel, salt	11 barrels	San Francisco	1 year
Mackerel, salt	20 barrels	San Francisco	1 year
Mackerel, salt	26 barrels	San Francisco	1 year
Mackerel, salt	30 barrels	San Francisco	1 year
Mackerel, salt	61 barrels	San Francisco	1 year
Sardelles	60 kegs	San Francisco	8 months
Salmon	13 boxes	San Francisco	1 year
Salmon	17 barrels	San Francisco	1 year
Salmon	30 barrels	San Francisco	1 year
Sound	6 barrels	San Francisco	1 year
Fruit—			
Apricots	25 pounds	San Francisco	1 year
Apricots	25 pounds	San Francisco	1 year
Apricots	25 pounds	San Francisco	1 year
Apricots	25 pounds	San Francisco	1 year
Apricots	25 pounds	San Francisco	1 year
Figs	9 cases	San Francisco	6 months
Meat—			
Bacon	7 cases	San Francisco	1 year
Beef kidneys	670 pounds	San Francisco	8 months
Kids	580 pounds	San Francisco	4 months
Sausage	9 cases	San Francisco	1 year
Sausage	3 cases	San Francisco	2 months
Sausage	7 cases	San Francisco	9 months
Sausage	4 cases	San Francisco	1 year
Sausage	1 case	San Francisco	1 year
Sweetbreads	250 pounds	San Francisco	1 year
Sweetbreads	318 pounds	San Francisco	11 months
Sweetbreads	140 pounds	San Francisco	10 months
Mushrooms	24 cases	San Francisco	1 year
Nuts—			
Almonds	50 boxes	Los Angeles...	11 months
Almonds	420 pounds	San Francisco	1 year
Peanuts	7 sacks	Los Angeles...	9 months
Peanuts	3,920 pounds	San Francisco	1 year
Peanuts	5,600 pounds	San Francisco	6 months
Peanuts	3,700 pounds	San Francisco	6 months
Pecans	18 cases	Los Angeles...	11 months
Peppers—			
Dried	2 lots	Los Angeles...	15 months
Chili	4 sacks	Los Angeles...	1 year
Chili	21 sacks	Los Angeles...	1 year
Chili	1,961 pounds	Los Angeles...	1 year
Chili	7,676 pounds	Los Angeles...	1 year
Chili	4,876 pounds	Los Angeles...	1 year
Chili	2,304 pounds	Los Angeles...	1 year
Chili	12 sacks	Los Angeles...	6 months
Poultry	161 dozen	San Francisco	1 year
Poultry	117 dozen	San Francisco	1 year
Poultry	40 dozen	San Francisco	8 months
Poultry	38 dozen	San Francisco	8 months
Poultry (turkeys)	5,472 pounds	San Francisco	10 months
Poultry	78 dozen	San Francisco	1 year
Poultry	100 dozen	San Francisco	1 year
Poultry	62 dozen	San Francisco	1 year
Poultry	19 boxes	San Francisco	4 months
Poultry (ducks)	65 pounds	Oakland.....	4 months
Poultry (turkeys)	2,482 pounds	San Francisco	2 months
Raspberry pulp	Lot No. 2961	Los Angeles...	1 year

SUMMARY OF ANALYTICAL WORK.

July 1, 1914, to June 30, 1915.

Foods and Food Products.

Official.

Material	Legal samples	Illegal samples	Total
Baking powder.....	22		22
Beverages.....	40	16	56
Butter.....	3	1	4
Cereals.....	8		8
Cheese.....		1	1
Chocolate and cocoa.....	1	9	10
Coffee.....	7	2	9
Colors.....	8	1	9
Confectionery.....	42	3	45
Condiments.....	35	23	58
Corn.....	5	1	6
Cream.....	1		1
Eggs.....		1	1
Egg substitutes.....		4	4
Extracts.....	29	44	73
Fish.....	7	4	11
Flour.....	6	1	7
Fruits.....	11	2	13
Gelatine.....	6		6
Ice cream.....	27	12	39
Jams and jellies.....	2	3	5
Liquors.....	6	13	19
Meats and meat products.....	47	27	74
Milk.....	6	2	8
Milk, evaporated.....	94	50	144
Oils, edible.....	7	1	8
Olives.....	10		10
Pastes.....	1	10	11
Pastry fillers.....		4	4
Rice.....	5		5
Syrups, table.....	4	7	11
Syrups, soda water.....	5	49	54
Spices.....	71	9	80
Sugar.....	10	1	11
Vegetables, dried and canned.....	5	28	33
Vinegars.....	53	22	75
Water, drinking.....	1		1
Totals	585	351	936

Drugs.

Ammonia, aromatic spirits of.....	16	127	143
Arnica, tincture.....	3		3
Asafoetida powder.....		1	1
Bitters, ungarian stomach.....	1		1
Boneset.....	1	1	2
Camphor compounds.....	35	19	54
Catarrh cure.....		1	1
Cold tablets.....	1		1
Corn remedy.....	2	1	3
Cough cure.....	1	2	3
Digitalis tincture.....	5		5
Ginger, essence Jamiaca.....	1	1	2
Hair tonic.....		1	1
Iodine, tincture.....	2	2	4
Magnesia, citrate of.....	2	2	4
Miscellaneous remedies.....	8	10	18
Nitre, sweet spirits.....	18	90	108
Nux vomica.....		3	3
Paregoric.....	2	1	3
Salts, epsom.....	20		20
Totals	118	262	380

SUMMARY OF ANALYTICAL WORK—Continued.

July 1, 1914, to June 30, 1915.

Foods and Food Products.

Unofficial.

Material	Legal samples	Illegal samples	Total
Baking powder	20	2	22
Beverages	2	1	3
Butter	2		2
Cereals	2		2
Chocolate and cocoa	1		1
Coffee	2		2
Coffee substitute	1		1
Color, artificial	2		2
Condiments	1		1
Extracts	1	1	2
Fruit	3	2	5
Honey	1		1
Liquors	6	1	7
Meats	1	2	3
Milk	1		1
Milk, evaporated	3	3	6
Miscellaneous	1		1
Oils, edible	1		1
Oils, mineral and lubricating	1	1	2
Pastes	1		1
Pastry fillers	1		1
Preservatives	3		3
Rice	2		2
Soap		1	1
Syrups	6	1	7
Spices	3		3
Wastes	3		3
Water	20		20
Totals	97	15	112

SUMMARY OF ANALYTICAL WORK—Continued.

July 1, 1914, to June 30, 1915.

Drugs.

Unofficial.

Material	Legal samples	Illegal samples	Total
Aspirin	3		3
Bitters	1		1
Boric acid	1		1
Camphor, spirits	2		2
Colic remedies	1		1
Corn cure	1		1
Iodine, tincture	1		1
Kidney remedies		2	2
Leaves, henna	1		1
Miscellaneous remedies	1	2	3
Nitre, spirits	1	4	5
Port, tonic		1	1
Rheumatism remedies	1	1	2
Salts		1	1
Skin ointment	1		1
Totals	15	11	26

SUMMARY OF ANALYTICAL WORKS—Continued.

June 30, 1914, to June 30, 1915.

Foods and Food Products.

Unofficial.

State Institutions.

Material	Conform- ing to specifi- cations	Not con- forming to speci- fications	Total
Ammonia	2	1	3
Baking powder	9	2	11
Baking soda	6		6
Blankets	106	58	169
Butter	2	3	5
Cereals	13		13
Chocolate and cocoa	8		8
Cocoonut	2	1	3
Coffee	138	44	182
Coffee substitute	26		26
Condiments	13		13
Cloth	5		5
Cream tartar	5		5
Cream tartar substitute	4		4
Cutlery	22		22
Eggs	2	5	7
Extracts	16	2	18
Fish	2		2
Flour	20	1	21
Fruit	6		6
Gelatine	2		2
Hair, curled	6		6
Jams and jellies	3		3
Lard	1	1	2
Liquors	3		3
Leather	5		5
Miscellaneous material	2		2
Oils, edible	39		39
Oils, mineral and lubricating	17	1	18
Pastes	15		15
Rice	34	3	37
Salt	4		4
Soap, laundry, sand, toilet, liquid	31	30	61
Soap powders	8	1	9
Syrups	8	2	10
Spices	82	9	91
Starch	6		6
Sugar	10	2	12
Tea	141	22	163
Vegetables	29	2	31
Vinegars	23	3	26
Totals	876	188	1,064

SUMMARY OF ANALYTICAL WORK.

July 1, 1915, to June 30, 1916.

Foods and Food Products.

Official.

Material	Legal samples	Illegal samples	Total
Baking powder.....		2	2
Baking powder substitute.....		1	1
Beverages.....	21	35	56
Butter.....	2	2	4
Bread.....	3	1	4
Cereals.....	4	2	6
Cheese.....	2	3	5
Chocolate and cocoa.....	2	4	6
Coffee.....	2	5	7
Coffee substitute.....		1	1
Condiments.....	47	206	313
Confectionery.....	19	6	25
Corn.....	2	2	4
Eggs.....	15	143	158
Egg substitute.....	1	7	8
Extracts.....	20	30	50
Fish.....	4	1	5
Flour.....	8	2	10
Fruit.....	6	6	12
Gelatine.....	1		1
Honey.....	3		3
Ice cream.....	14	2	16
Jellies and jams.....	4	5	9
Lard.....	3		3
Liquor.....	17	58	75
Macaroons.....		5	5
Meat and meat products.....	138	110	248
Milk.....	7	8	15
Nuts.....		4	4
Oils, edible.....	5	1	6
Olives.....	5	2	7
Pastes.....	33	33	63
Pastry.....	5	2	7
Pastry fillers, etc.....	1	3	4
Salt.....		1	1
Saltpeter.....		1	1
Soups.....	1		1
Spices.....	21	24	53
Sugar.....	1		1
Syrups, table.....	3	8	11
Syrups, soda water.....	6	123	129
Vegetables.....	3	7	10
Vinegar.....	27	13	40
Waters.....		1	1
Totals.....	464	980	1,394

SUMMARY OF ANALYTICAL WORK—Continued.

July 1, 1915, to June 30, 1916.

Drugs.

Official.

Material	Legal samples	Illegal samples	Total
Ammonia, aromatic spirits of	3	12	15
Aspirin	67	43	110
Bitter		1	1
Camphor compounds	25	25	50
Consumption remedies	1		1
Corn remedies		1	1
Gin		4	4
Ginger compounds	1	11	12
Hair tonics		2	2
Iodine compounds	11	3	14
Magnesia	2		2
Miscellaneous		2	2
Nitre compounds	3	18	21
Oils	2	8	10
Peppermint	1	7	8
Port		1	1
Quinine compounds		1	1
Rheumatism remedies		1	1
Salts	1		1
Sandalwood		1	1
Syrups	1		1
Skin remedies		1	1
Tonics		1	1
Veronal	5	1	6
Waters		2	2
Witch hazel	1	1	2
Totals	124	147	271

SUMMARY OF ANALYTICAL WORK.

July 1, 1915, to June 30, 1916.

Foods and Food Products.

Unofficial.

Material	Legal samples	Illegal samples	Total
Ammonia		1	1
Beverages	6		6
Bread	5		5
Butter	1	1	2
Coffee		3	3
Coffee substitute	1		1
Colors		4	4
Confectionery	3	1	4
Condiments	58	166	224
Corn	1		1
Cream		1	1
Cream of tartar	1		1
Eggs	1	1	2
Egg yolks	1		1
Extracts	10		10
Fish		1	1
Feed	3		3
Flour	26		26
Fruits		2	2
Jellies and jams	1	1	2
Liquors	9	4	13
Meats	4	3	7
Milk	7	3	10
Miscellaneous materials	6	1	7
Nuts		3	3
Oils	1	1	2
Olives	3	1	4
Paste	7	5	12
Pastry		1	1
Poultry foods	5		5
Preservatives	5	2	7
Rice		1	1
Saltpetre		1	1
Syrups	4	5	9
Soap	2		2
Soda water syrups		1	1
Spices		9	9
Vegpara	1		1
Vinegar	8	6	14
Waste			3
Waters			12
Totals	196	229	424

Drugs.

Alcohol	2		2
Aspirin	8	8	16
Camphor compounds		1	1
Cancer remedies		2	2
Consumption remedies		1	1
Ether compounds	2		2
Hair tonics	2	1	3
Miscellaneous	1	1	2
Oils	6	1	7
Quinine compounds		1	1
Tonics		2	2
Veronal	1		1
Totals	22	18	40

SUMMARY OF ANALYTICAL WORK.

July 1, 1915, to June 30, 1916.

State Institutions.

Unofficial.

Material	Conform- ing to specifi- cations	Not con- forming to speci- fications	Total
Ammonia	1	7	8
Baking Powder	1		1
Baking soda	2		2
Baking powder phosphate	1		1
Blankets	47	26	73
Butter	7		7
Cereals	24	4	28
Cheese	9	1	10
Chloride of lime	1	1	2
Chocolate, cocoa	8	1	9
Chrome	2		2
Coffee	27	14	41
Coffee substitutes	9		9
Condiments	11	6	17
Corn	3		3
Cream of tartar	4		4
Eggs	9	5	14
Extracts	13		13
Fish	6		6
Feed	5		5
Flour	37	7	44
Fruit	11	3	14
Gelatine	2		2
Hair, curled	6		6
Inks	18	1	19
Jellies and jams	2		2
Lard	3	1	4
Leather	45	45	90
Liquors	17		17
Lye	1		1
Meats	1		1
Milk	1	1	2
Miscellaneous materials	7		7
Oils	55		55
Paste	3		3
Rice	21	2	23
Sago	1		1
Salt	7	1	8
Syrups	22	18	40
Soap	64	85	149
Soap chips	4	18	22
Washing powders	2	6	8
Spice	38	5	43
Starch	5		5
Sugar	10		10
Teas	23	17	40
Vegetables	8	1	9
Vinegar	33	9	42
Totals	637	285	922

REPORT OF THE STATE BOARD OF HEALTH.

SUMMARY OF ANALYTICAL WORK—Continued.

July 1, 1915, to June 30, 1916.

Foods and Food Products.

Cold Storage.

Material	Number not in violation of California Pure Food Act	Number in violation of California Pure Food Act	Total
Butter		6	6
Cheese	1		1
Confectionery		1	1
Condiments	9	12	21
Eggs	21	207	228
Fish	21	2	23
Flour	3	1	4
Fruit	2	1	3
Jelly	1		1
Meats	8	21	29
Nuts	5	11	16
Totals	71	262	333

SUMMARY OF ANALYTICAL WORK.

For the Year Ending June 30, 1915.

Material	Legal samples	Illegal samples	Total
Food and food products, official	585	351	936
Drugs, official	118	262	380
Food and food products, unofficial	97	15	112
Drugs, unofficial	15	11	26
State institution	876	188	1,064
Totals	1,691	827	2,518

SUMMARY OF ANALYTICAL WORK.

For the Year Ending June 30, 1916.

Material	Legal samples	Illegal samples	Total
Food and food products, official	464	930	1,394
Drugs, official	124	147	271
Food and food products, unofficial	195	229	424
Drugs, unofficial	22	18	40
State institution	687	235	922
Cold storage	71	262	333
Totals	1,513	1,871	3,384

SUMMARY OF ANALYTICAL WORK.

For the Biennial Period.

Material	Legal samples	Illegal samples	Total
Food and food products, official	1,049	1,281	2,330
Food and food products, unofficial	292	244	536
Drugs, official	242	409	651
Drugs, unofficial	87	29	116
State institutions	1,513	473	1,986
Cold storage	71	262	333
Totals	3,204	2,698	5,902

REPORT OF THE CONSULTING NUTRITION EXPERT.

M. E. JAFFA, M.S.

The work of the Consulting Nutrition Expert has been conducted along two different lines: (a) consultation, conference, and correspondence; (b) investigation of the food problems of the state institutions.

For several years previous to 1915 the State Board of Control arranged with the State Board of Health to have all the food purchased for state institutions submitted to the Food and Drug Laboratory for examination. Samples accompanying bids are analyzed and awards made on basis of quality as determined by reports of the director of the State Laboratory. This work is annually carried out and has been productive of the best results. In addition to the initial examination, tests are also made on deliveries. Thus all purveyors of food supplies realize the state's attitude on the food question with reference to quality and that deliveries must correspond to bid samples.

It was, however, manifestly illogical and insufficient to provide high-grade raw materials and take no cognizance of the methods of storage, the mode of handling, cooking and serving such foods after they were purchased. Indeed a further canvass of the situation proved that in many instances the raw food deteriorated, or the cooked food was rendered unpalatable or indigestible by undesirable methods at some point along the line. Economy in purchasing may be quite offset by poor cooking and serving, which results not only in waste, but in an unnecessary and inexcusable hardship endured by the people fed.

Therefore in July, 1915, the Board of Control instructed the Consulting Nutrition Expert to visit all the state institutions and study the dietary and food conditions with a view to suggesting possible changes and improvements. In accordance therewith two or more trips have been made to each of the state institutions and reports rendered. The nutrition advisor visits all departments which relate in any manner to the commissary department and discusses the problems with the superintendent.

Considerable time is spent in the kitchen for the purpose of examining the facilities and equipment; the methods of cooking the different foods; of handling same subsequent to preparation and while waiting transference to the wards; the manner of serving; the cause of leftovers, if excessive, and the use made of them; the amount and kind of waste which goes to the farmyard.

Menus are discussed in detail with the chef and suggestions made and a number of recipes given with the object of furnishing the patients with a more varied and attractive bill of fare without appreciably increasing the cost.

Careful inspection is made of the refrigerating plant, its operation, handling of the stored foods in the various compartments, to the end that proper segregation of food shall be made and sanitary conditions prevail.

Special attention is given in the dining-rooms to the general appearance of the room; table; table setting; tableware; the serving of the food; the cutting of the bread (carelessness in this regard causing undue waste); the serving of meals on trays to bed patients; the supervision of the head attendant over patient help. As there is, in no hospital,

any provision made for the warming of dishes or for keeping food warm after its arrival at the wards, it is evident that the best efforts in the kitchen may be more or less nullified by the lack of proper equipment in the dining-rooms or pantries in the individual wards.

In order to get a real insight into the "why and wherefores" of conditions, it is necessary to be on "deck" from 5.00 a.m. to 6.00 p.m. or later, and even then two full days do not afford enough time to admit of being present at all of the wards during meal times.

A report of conditions which call for changes or improvements should not be construed into a criticism of any of the personnel of the respective institution. It is not to be expected that any part of the many institutions has reached such a degree of perfection that it can not be bettered, nor yet that *all parts* should spontaneously grow with the general growth and develop to a more modern standard. Special effort must be directed toward each department and it is necessary that the commissary department receive its full share of expert attention in order that it keep pace with the rapid development that has characterized the other departments of our state institutions.

There certainly can be no question in regard to the standard for a diet in the state institutions. If we are to look for proper feeding any where it should be in the dietaries of these people who are wards of the state. The federal government has set an example by its manner of feeding the army and navy and it would seem reasonable to expect the various state governments to follow suit. But there are many difficulties to be met and overcome before any complete standardization can be accomplished.

It is a comparatively easy matter to sit in an office and work out a dietary for an average man of middle age pursuing an active or sedentary mode of life, etc. It is easy to provide a proper nitrogen and mineral balance, but to put such a dietary into operation in a number of institutions, each housing from 1,200 to 2,000 inmates representing all varieties of past food habits and present needs; where the cook, the steward and other attaches have their past habits; where the plant and equipment and farm facilities vary and can only be improved gradually, demands an effort, in the direction of *evolution* rather than *revolution*. It is probable that here, as elsewhere, the law of evolution will not only bring about the "survival of the fittest" among cooks and other attaches, but will also prove an incentive to more thorough training of those persons desiring the positions of steward, housekeeper, and dietitian.

The aim of the work at present is to establish a more or less uniform dietary in all of the state institutions which are of a uniform character. It is unnecessary to say that the inmates of the hospital for the insane should have a different dietary than the inmates of a state prison. But it is, however, manifestly unfair that the diet of one group of the mentally disqualified should be grossly inferior to that provided for other groups of the *same class*. The problems in the separate institutions are very different and must be handled differently for some time, but there is no reason why they should not be quickly brought to a general level of equality. Not that it is intended to formalize all the character and individuality out of any of them, but to make them equally correct and equally good according to their legitimate differences. The next effort will be to raise the general level until a real standardization has been accomplished.

The advantages of repeated visits are many among which may be cited the following:

1. It is difficult for any person following a monotonous daily routine to keep up a high standard without some sort of stimulation to the putting forth of his best efforts. This stimulation is well supplied by the knowledge that he may be visited at any unexpected moment and also that his work will be compared with that of others doing a similar form of work in kindred institutions.

2. The adviser has an opportunity to observe and compare the results obtained from the use of different plants, equipment, methods, old and new, and thus be more justified in deciding between these and recommending the most efficient.

3. As the watchword used in working toward the standard is to be development and not upheaval, it is often advisable to be sure that one improvement has become fixed before suggesting the next.

4. The next step to be taken and how to take it can be judged better on the ground than from a remote office.

The result of this year's work is extremely satisfactory, due in large measure to the hearty cooperation on the part of the superintendents and officials concerned. Not only has a decided improvement taken place in many of the departments of most of the institutions, but the spirit of progress has been spread abroad with the result that the officials of several of the county hospitals and jails have asked for visits and suggestions for improvements. Thus it would seem that the work begun by the state will be followed by the county and it is to be hoped that in the near future even private institutions will fall into line so that in time California may feel justly proud of its manner of feeding dependents.

REPORT OF THE BUREAU OF TUBERCULOSIS.

E. L. M. TATE, Director.

The history of legislation dealing with the tuberculosis problem in California dates back to 1904. During the general awakening to the necessity of hospital care for the tuberculous, the eastern and middle western states made large appropriations, that have since doubled and trebled in amount, for state sanatoria.

A bill was introduced in the California legislature of 1904, asking for an appropriation of \$150,000 for a state sanatorium. The bill failed to pass. In 1907, the legislature passed a law requiring the registration of tuberculosis and an antispitting law was passed. Two thousand dollars were appropriated for the dissemination of knowledge to prevent the spread of tuberculosis. Nearly one million pieces of educational literature on tuberculosis were distributed to school children.

The State Board of Health was also empowered to contract for treatment of indigent tuberculous residents, in public or private sanatoria, the bill for their care to be met by the patients' home county. in view of the fact that there are no public sanatoria outside of the counties, making provision for their own tuberculous indigents and that the private institutions are unable to care for patients at a rate that the counties would be willing to pay, the Board of Health has never been able to place patients in outside institutions. The supervisors sticking to the letter of the law, are even unwilling to take their own residents, who are willing to pay their own expenses.

In 1911, the California Tuberculosis Commission was appointed by the State Board of Health. An appropriation of \$5,000 was made to carry on the investigation. The commission reported to the legislature of 1913, making recommendations, and presenting a constructive programme. The first step was the establishment of a Bureau of Tuberculosis, the director of the bureau to make inspection and have supervision over hospitals, dispensaries and other institutions caring for the tuberculous. The bureau, created by the legislature of 1913, carried an appropriation of \$7,500. This amount was too small to permit more than one inspection of hospitals and allowed only sufficient postage to carry on the administrative work of the bureau.

The example set by California resulted the following winter in the creation of the bureau of tuberculosis in the state boards of health of New York, Ohio and Wisconsin. The inspection of county hospitals making provision for indigent tuberculous patients brought to light two significant facts: first, more deaths from tuberculosis were recorded in nearly every county; second, that the hospitals were only serving as a place where the homeless, and often the tuberculous tramp, too ill to continue his journey, could be taken to die. The counties justified their lack of proper care by the fact that they were waiting to see what policy the state intended to adopt. Many of the counties, particularly in the northern part of the state, have no provision for the tuberculous. Conferences were held by the California Association for the Study and Prevention of Tuberculosis with the State Board of Health and others interested in the problem. The high death rate in the counties, the inadequate number of beds, the lack of proper buildings, medical attention and nursing care of the tuberculous,

coupled with the utter impossibility of caring for the large number of patients needing hospital care, made an adequate state institution, unless the appropriation was a million dollars, an impossibility.

In 1915, four tuberculosis measures were introduced in the legislature. Three bills of a similar nature called for an appropriation of \$100,000 for a state sanatorium. The other enlarged the duties and powers of the Bureau of Tuberculosis, authorizing a subsidy of \$3.00 per week per resident tuberculous indigent to be paid to counties maintaining hospitals or wards, that complied with the standard required by the Bureau of Tuberculosis, the director having the same powers of inspection and supervision as in the previous act of the legislature of 1913. The bill carried an appropriation of \$75,000; the sum of \$20,000 was set aside for the administration of the act, and \$55,000 for the subsidy to be paid the counties complying with the standards laid down by the bureau. After the passage of this act, the bureau was confronted with the task of standardizing separate buildings, pavilions or wards in large general hospitals, and rooms in almshouses. The standard must not only change the present system but also serve as a standard for buildings to be constructed in the future. That the present standard adopted by the State Board of Health has changed the county hospitals enough so that they rank with the first-class private and public sanatoria of the country, is no exaggeration. From a condition in which there was no medical attention, and frequently no nursing except what the patients gave each other, these subsidized hospitals have improved until now they are giving first-class care and treatment. In view of the fact that in many of the counties no provision is made in private hospitals for treatment of tuberculosis, coupled with the fact that sanatorium care in private institutions excludes the patient who can pay only \$1 per day, the subsidized hospitals now are confronted with requests from patients able to pay a small amount for care and treatment, and this demand must be met, since there are only four semiphilanthropic institutions in the state.

After the appointment of the present director in October, 1915, letters were sent to the chairmen of the thirty-nine counties having hospitals with tuberculosis departments or beds reserved for tuberculous patients. With these letters, which explained the new law, were sent application blanks for inspection of the hospitals. Seventeen counties immediately made application for inspection, the director making the inspection in the order of the applications.

In 1911, the San Francisco Board of Education passed a resolution requiring that all new school buildings have at least one or more rooms for open air school purposes.

Various local ordinances have been passed. The city of Los Angeles in May, 1915, by an overwhelming vote on Amendment No. Five, placed one visiting tuberculosis nurse for every hundred registered cases of tuberculosis under the health department, to assist in the clinics and to instruct and care for patients. San Diego also passed an ordinance providing for a visiting nurse for the tuberculous poor of that city.

In 1916, the San Francisco Board of Health secured \$5,000 for tuberculosis nurses.

In 1916, the health department of Los Angeles took over the work of the sixteen clinics and employed two physicians to be in charge of the clinics.

STANDARDIZATION FOR TUBERCULOSIS WARDS OR PAVILIONS OF COUNTY HOSPITALS.

In determining the eligibility of hospitals for the state tuberculosis subsidy, they will be graded by the State Board of Health, according to location, construction, treatment and care of patients, and diet.

Location and grounds—will count one to five points.

Construction and type of building—one to twenty-five points.

Treatment and care—one to thirty-five points.

Diet—one to thirty-five points.

A hospital must receive a total of eighty points to be eligible for the state subsidy.

Location.

Any buildings or pavilions to be constructed in the future must be on a part of the grounds separate from the general hospital. Counties contemplating construction must bear this in mind and consult with the bureau before locating their building. Accessibility, transportation, length of time in reaching the hospital, and its proximity to other county buildings will be the points on which location will be graded.

Buildings.

The bureau discourages the erection of an expensive type of building unless it is a part of a general plan for a large county or city and county hospital. In the smaller counties, inexpensive buildings have been erected to care for as many as forty patients for about \$14,000.

Buildings will be graded on their construction and on the type of building, also their capacity relative to the need of the tuberculosis poor of the county. They will be classified as separate buildings, pavilions, cottages, wards in a general hospital, "shacks" or tent houses.

Class A structure.

A separate building.—It must have proper accommodations for a head nurse; sufficient baths, toilets and lavatories for patients; a diet kitchen for preparing food which can not be transported; two kitchen sinks or adequate facilities for washing and disinfecting dishes. If the building is separate from the general hospital and run as a sanatorium, it must have an examination room. There must be isolation rooms for advanced cases; not less than one isolation room for every ten patients. In the wards, there must be a minimum distance between beds of 3 feet 6 inches. Wards must be sufficiently lighted, preferably by electricity. Wards need not be heated, but dressing rooms, bath-rooms and patients' dining-room must be heated in cold weather.

Class B structure.

A ward in the general hospital.—The requirements regarding equipment and sufficient isolation rooms and food will be the same as for Class A. Class B structures must have a separate dining-room for ambulatory patients.

Class C structure.

The "shack" type or tent house.—It can not be used except for earlier cases. Any erection of a "shack" or tent house will be discouraged unless a nursing force is provided adequate for giving patients the necessary care.

Equipment.

In structures of any of the three classes, the following requirements must be met: In buildings having over thirty-six (36) beds, one tub or shower bath for every twelve (12) patients; one lavatory for every six (6) patients; one toilet for every six (6) patients; two dental lavatories and two slop sinks for every thirty-six (36) patients; two kitchen sinks are desirable. The stove in the kitchen must be large enough so that if food is to be prepared there, it can be done without inconvenience.

There must be back rests for bed cases; ambulatory cases must be provided with inexpensive canvas reclining chairs. If trays are used, they must be kept clean. The more expensive aluminum trays last much longer than the common papier maché, which will not be allowed in the future. The use of granite iron dishes and tin spoons is discouraged.

Call bells must be provided in each ward; properly ventilated lockers must be provided for each patient; scales also must be provided.

Wards and rooms must be screened and wards and sleeping rooms must be canvassed. A platform or sun porch must be provided.

Treatment and care.

If there is not a resident staff connected with the hospital, a visiting staff must be arranged. This can be done through the County Medical Society. There must be one interne for every fifty patients. Daily records must be kept. There must be a complete examination on admission and frequent subsequent examinations. The diagnosis and type of tuberculosis must be recorded and the complete record of the patient must be kept where it is accessible to the representative of the State Board of Health. Temperature must be taken four times a day and accurate charts must be kept.

Nursing.

In Class A buildings there must be one registered nurse who has had special training in tuberculosis nursing, and one nurse for every sixteen patients; also one orderly. In Class B buildings nursing must be supervised by the superintendent of nurses, one pupil nurse provided for every sixteen patients.

Admission.

The admission blanks furnished by the State Board of Health must be filled out in full and sworn to by the patient and the superintendent of the hospital.

Care of patients.

Adult patients must be segregated as far as possible, according to the stage of the disease. Bed cases must be placed in the smaller wards, so that it will be convenient for dying cases to be taken into the isolation

rooms. Children must be segregated in a small ward of their own. Bedding must be disinfected after death or removal of each patient. Patients needing extra heat at night must be given hot water bottles or soapstones.

Property of patients.

Provision must be made for the safe storage of any valuables or money deposited by the patient.

Food.

Care must be taken in handling and serving food for patients so it will be attractive. There is an enormous waste of food in hospitals, due to the fact that patients frequently can not eat the food served them. It must be remembered that patients suffering with tuberculosis nearly always have serious stomach disturbances and fickle appetites, and the serving of food to these patients must be done with this in mind. If the food is to be transported from the general hospital, it must be sent over in a fireless cooker or reheated before being served.

Tea must be made in the diet kitchen, and coffee, if sent from the general hospital, must be hot, when served. We recommend that coffee and toast and eggs be prepared in the diet kitchen.

A suggested diet list will be submitted by the State Board of Health.

San Joaquin County Tuberculosis Hospital.

San Joaquin County was visited first. The building was in fair condition, but the nursing, food and medical attention was inadequate in every way. A conference was held with the supervisors and superintendent of the hospital and the necessary changes discussed. The board of supervisors at once agreed to make the changes, *i. e.*, a diet kitchen for the second floor, also a utility closet, and an additional bathroom for the first floor. Two graduate nurses besides the pupil nurses from the general hospital were added to the nursing service, as well as an orderly and a dietitian. Patients on entering were given a complete physical examination. The food now is excellent and the people of San Joaquin County are to be congratulated upon the splendid way in which this hospital is run. The subsidy was granted February 5, 1916.

Fresno County Tuberculosis Hospital.

The director, prior to her appointment, when executive secretary of the California Association for the Study and Prevention of Tuberculosis, appeared before the grand jury in December, 1914, and urged the establishment of a new building for Fresno County's indigent tuberculous patients. The grand jury made the recommendation to the supervisors, and in November, 1916, the building was finished. For the amount of money expended, it probably gives as good care as many buildings costing three times as much. No private institution has provided any greater comfort. A physician spends half of every day there, and there are also two graduate nurses and an orderly. Ten beds had in the beginning seemed adequate for women patients, since no provision had been made previously. By July, 1916, the number of women patients had increased so, that the twenty-bed ward

for men had to be given over to the women patients. The Fresno building has excited favorable comment everywhere; it has a capacity of forty-eight beds, which undoubtedly will have to be increased soon. It was subsidized April 1, 1916.

Los Angeles County Tuberculosis Hospital.

Los Angeles County applied for inspection, and while the tuberculosis wards were in good condition and the patients received proper care and medical attention, the overcrowded condition of the hospital and the long waiting list made the subsidy impossible. The director asked the supervisors for \$5,000 to erect a temporary building for ambulatory patients; this request was granted and a comfortable thirty-bed building provided. The building used every available bit of ground at the hospital. It was subsidized February 5, 1916, December 2d 23 more beds were subsidized in the women's ward.



Ward in the San Joaquin County Tuberculosis Hospital, the first hospital in California to receive the state subsidy.

Alameda County.

In February, 1916, inspection was made at the Alameda Infirmary. The present building for the tuberculous accommodated only seventy-five patients. Considerable time and care was spent in the endeavor to find an available site at the present hospital. At the director's request, the ground was surveyed, but no site was available, so that in March a report was submitted to the supervisors, urging them to obtain a site in the hills, where a separate institution could be erected. Fortunately, in a few weeks, a site was found, ideal in every respect.

The land was purchased and plans drawn to erect a modern sanatorium to cost \$104,000. Too much credit can not be given to the supervisors of Alameda County for this willingness and cooperation to establish the first sanatorium of the kind in the state, nor to the other county officials and the Alameda Society for the Prevention of Tuberculosis and the Alameda Public Welfare Commission. Provision will be made for at least 140 patients. There will be an administrative building, an infirmary, sleeping pavilions for the men patients, a workshop, a children's building with a nursery and an open air school, besides a cottage for the nurses and quarters for the resident physician. The women patients are to be cared for in private rooms in the Infirmary. This institution will be ready some time in the early spring of 1917.

Marin County.

At the request of the Marin County supervisors, the quarters for the tuberculous were inspected in April. Provision for these patients consisted of tent houses; there was no nursing care except that done by patients and most of the patients prepared their own meals. A building to care for men and women patients was suggested; plans were drawn following this visit. They were immediately accepted by the bureau. The building which is now completed has private rooms with adequate baths and toilets, one wing provided for men and the other for women. It will accommodate 12 patients. In the center are the nurses' living quarters, with a kitchen and combination dining and sitting room. This building will be subsidized as soon as furnished. It fills a much needed place in this county where so many younger patients seem to need care and treatment.

San Francisco.

Conferences have been held in San Francisco in connection with the overcrowded condition of the tuberculosis wards of the City and County Hospital. Repeated inspections were made to ascertain what could be done to relieve the situation. The superintendent of the hospital and the director appeared before the supervisors and asked for \$6,600 to remodel two buildings. This was granted. A second story was added to one of the buildings used for male patients, examination rooms, nurses' stations, a number of isolation rooms, with the required number of baths, toilets and lockers added to make it come up to the standard required by the bureau. Forty-three beds were subsidized July 1, 1916, and 40 more in the women's ward September 2, 1916.

The women's ward was also remodeled, more isolation rooms were added, as were also lockers, the bed capacity has been increased, and the buildings painted. Additional nursing service was furnished and several minor improvements were made in accordance with the recommendations of the bureau.

Shasta County.

From the north came a request for immediate inspection. Shasta County Hospital, with a bed capacity of eight, wished to apply for the subsidy. Inspection of the tent houses, in a dilapidated condition,

and building in which the tuberculosis patients were housed, showed that the subsidizing was impossible. The supervisors presented blue prints which were not quite adequate, and the plans were redrawn according to recommendations from the director. The county will soon have a building adequate to care for patients in any stage of the disease, also there will be private rooms with provision for the nurse in charge, similar to those of the Marin County Hospital. This building will soon be completed and subsidized. It will accommodate 12 patients.

Orange County.

Orange County was inspected the last of May. The building had been erected too near the general hospital. It was suggested that it be moved some distance away. It is a good structure with wide porches and large rooms, but the director was unable to recommend it for the subsidy because the building was not in charge of a trained nurse as required in the standards. The building has not been used enough to be appreciated.

Sacramento County.

Sacramento County was recommended for the subsidy in June. Many changes were made to comply with the standard; new furniture, new battleship linoleum for the floors, new kitchen arrangements, a sterilizer for the dishes, a change of diet and a graduate nurse were provided before it was recommended. The Sacramento County Tuberculosis Hospital's bed capacity is inadequate for handling its tuberculosis problem. At the state meeting of county supervisors at Redding in May, 1916, it was decided, subject to a favorable opinion from the Attorney General, that Sacramento and a group of northern counties would take advantage of the law providing for a joint county hospital and build a sanatorium. The opinion handed down was favorable and letters to that effect were sent to the supervisors of Sacramento, Placer, Yolo, Amador, El Dorado, Contra Costa, Tuolumne, Nevada and Plumas counties. A committee on sites and building has been appointed and by the spring of 1917 this building will be under way. It will provide for a large group of patients who could not be cared for unless under such an arrangement. Counties in the north could continue to justify their lack of care by the fact that they could not afford to maintain a hospital or ward for their tuberculous patients, but with a joint county hospital, such as is contemplated, these patients can be properly cared for at a small expense to the county from which they come. A similar effort will be made in some of the counties in the southern part of the state, principally San Luis Obispo, Monterey, Ventura and Santa Barbara. Having this joint hospital in view, the inspection of some of the hospitals was deferred. Sacramento County was subsidized July 1, 1916.

Santa Clara County.

San Jose was inspected in June. The hospital needed more beds. Some changes in the kitchen and baths were necessary and new lockers were needed. The director suggested the changes but asked for another building. The supervisors and superintendent of the county hospital

felt that another building was necessary in order to take care of all their patients. So the plans have been approved for a splendid building that will more than double the present bed capacity.

San Diego County.

The San Diego County Tuberculosis Hospital has been inspected. It is one of the most crowded in the state and is inadequate in every way. It was decided not to make any recommendations until the bond issue was over. The director, with others who were interested, campaigned the county, but the bond issue for both roads and hospital was lost. The campaign was not without its good effect. The supervisors were willing, and the director urged them to consider a separate institution as Alameda had done. A committee was appointed to look for a suitable site.

Tuberculosis Dispensaries Established.

Many visits of inspection and conferences have been necessary to bring about these results. Not all of the hospitals that asked for inspection have been inspected. They have not been for the reason that the bureau was waiting for the development of the hospitals in the counties having the greatest problems. Along with the inspections of hospitals, has come the establishing of dispensaries, when they have been needed, and the installing of visiting nurses to supervise dispensary cases in their homes.

San Bernardino Tuberculosis Nurse.

Repeated visits to the San Bernardino County Hospital demonstrated the necessity, not only for a new hospital, but also a visiting nurse. Through the cooperation of the California Association for the Study and Prevention of Tuberculosis, a nurse was placed in San Bernardino for four months. The city has now made an appropriation to continue the work. With the cooperation of the agents of the State Board of Charities and Corrections and the attorney for the State Board of Health, inspection was made of the buildings at the San Bernardino County Hospital where the tuberculosis patients are kept. Conditions at this hospital beggar description. This county has the highest tuberculosis death rate and the worst hospital accommodations, of any county in the state. Recommendations were made to the supervisors, not with any idea of attempting to subsidize the building, as that was impossible, but to make it fit for human beings who were too ill to be sent elsewhere.

Tuberculosis Dispensaries and Nurses.

Dispensaries have been opened at Fresno and Sacramento. Additional dispensaries have been added to the Los Angeles service. The bureau has been able to secure for the various towns, help from the city or county or private individuals to help carry on the work.

At Sacramento, \$600 was secured from the city for the tuberculosis nurse. This is supplemented by a contribution of \$1,200 from a private individual interested in the work; \$900 was secured from the county for the visiting nurse and the clinic.

At Fresno, the city commissioners voted money toward the support of the clinic and a nurse was placed there to work under a committee of the Women's Club.

Marin County is meeting its needs through the establishment of a rural visiting nurse.

The agitation for more nurses will be continued, as will also the work with the Board of Education for more open air schools for children who are predisposed to tuberculosis.

The bureau had the direction of the work of the Dohrmann Memorial nurse, who spent four and a half months in Placer County inspecting the physical condition of the school children. So successful was this work, which is real preventive tuberculosis work, that nine counties applied for the services of a nurse. A temporary appointment was made for two months for the bureau to do some much needed work in a northern county.

Federal Tuberculosis Law Advocated.

Coupled with the campaign for better hospital care for resident indigent tuberculous patients, the bureau has carried on an active campaign by correspondence, all over the United States, to secure the passage of the "Kent Bill," which provides federal aid for certain hospitals reaching a standard of care and treatment, required by the Public Health Service. The objects of the bill consist mainly of three points: first, an effort to make it possible for hospitals caring for non-resident indigents to give that indigent proper medical care. To do this is more expensive than the average hospital in a county could or would attempt, since the southwest is deluged at certain seasons of the year with patients, many too ill or too poor to return home. They are a constant menace. This bill aimed to make it possible for the government to subsidize hospitals so these patients might be cared for. Second, many a patient lured on by that intangible something called climate, has tried the climate only to learn to his sorrow that much more was necessary to effect a cure. The bill provided transportation of the patient to his home state, provided he could receive care in an institution there. The opponents of the bill lost sight of the fact that this was bound to act as a boomerang and compel states with a limited number of beds for tuberculous patients to increase the number. The bureau is convinced that one of the causes of migration is frequently the long waiting list in institutions, coupled with the fact that in many instances the patients when finally able to gain admittance, were unable to do so because they were no longer first stage cases. The Kent Bill has been favorably reported out of both houses of congress. It is the first recognition that has been made by the federal government of the tuberculosis problem. The bill will be the means of removing thousands of patients to hospitals who are now centers of infection.

Length of Residence of the Tuberculous.

The tables below show California's tuberculosis problem by length of residence for selected cities. A careful study of this will show that California's real problem lies with that group who have been in the state for life or ten years and over; this is particularly true north of Tehachapi.

Average Per Cents in Five-Year Period for Deaths from Tuberculosis Classified by Length of Residence in California for Selected Cities.

	Annual average per cent distribution of deaths from tuberculosis, 1911 to 1915				
	Under 1 year	1 to 9 years	10 years and over	Life	Unknown
California	8.8	26.7	26.7	27.9	9.9
Freeholders' charter cities.....	8.7	27.6	27.4	27.1	9.2
Rest of State.....	8.9	25.5	25.7	29.0	10.9
Selected cities--					
North of Tehachapl:					
San Francisco	3.3	14.3	28.6	39.8	14.0
Alameda	3.5	17.8	38.1	38.2	2.4
Berkeley	9.5	16.5	33.7	39.6	0.7
Oakland	3.0	18.9	30.2	42.8	5.1
San Jose	3.5	14.0	33.0	46.7	2.8
Fresno	9.0	22.9	31.3	29.7	7.1
Sacramento	4.7	16.5	28.8	31.6	18.4
Stockton	2.3	16.2	38.4	29.8	13.3
South of Tehachapl:					
Los Angeles	13.3	42.4	24.7	12.2	7.4
Pasadena	18.1	46.3	25.4	9.4	0.8
Riverside	15.2	39.8	25.2	15.2	4.6
San Bernardino	15.3	37.1	20.9	10.5	16.2
San Diego	20.2	38.7	25.3	12.8	3.0
Santa Barbara	6.0	24.8	23.7	42.7	2.8

Counties in Process of Building that Will Operate Under the Subsidy.

Alameda.....	Livermore	140 beds
Santa Clara.....	San Jose.....	60 beds
*San Francisco.....	San Francisco.....	250 beds
San Diego.....	San Diego.....	66 beds
Los Angeles.....	Los Angeles.....	300 beds

816 beds

Placer, Yolo, Amador, El Dorado, Solano, Contra Costa, Sacramento, Tuolumne, Nevada and Plumas counties are committed to a joint county hospital operating under the subsidy. This will be in operation by July, 1917, and increase the bed capacity—200 beds.

With these several hospitals established and provision made for the patient who can pay, if not all, at least in part for his maintenance, the needs of a large group of patients needing hospital care, including those who, at present, can not be cared for in the county hospitals because they are not and do not wish to become county charges, will be met. Seventy-five per cent of the deaths occurring in this state are among the group earning less than \$1,000 per year, and 27 per cent of the orphans cared for by the state were deprived of their parents through tuberculosis. This shows how the long period of expensive illness compels the state later to care for dependents. The state's plan of giving adequate care and treatment in institutions near the patients' homes, where they can see their families and, at the same time, not be centers of infection, means that the source of infection is removed

*New hospital with no additional bed capacity but excellent accommodations.

and the families are thus protected. The amount saved by the family and the amount of money saved the community can not be reckoned. California has adopted the policy of caring for the many near their homes rather than the few in a distant state institution. When sufficient beds are established in the counties for the second and third stage cases, then the state can provide convalescent camps or a colony for incipient cases.

Educational Work.

The bureau has distributed over 30,000 pieces of educational literature. The book of instructions to patients, "What You Should Know About Tuberculosis," the "Physician's Note Book" on the diagnosis of tuberculosis, the "Don't" cards printed in nine languages, a series of antisputting cards for factories and shops and also street cars, and another series, printed in Italian, Spanish and Armenian.

Requests for copies of our educational literature, the Standard for Hospitals, the Dietary and the Regulations, are received constantly from all over the United States and Canada. This Board of Health is the first in the United States to furnish a standard for hospitals. The parcel post exhibit on tuberculosis has been in constant use in the rural schools and farm centers. A second exhibit is now ready dealing entirely with the work on the prevention of tuberculosis in California.

Reported Cases of Tuberculosis.

The constant nagging at health officers and physicians to report living cases has resulted in the registration of 6,000 cases from July, 1915, to July, 1916. The bureau needs the registration for many reasons, and since the law requires this reporting and the State Board of Health has ordered the records of cases closed to the public, it is hoped that more physicians will comply with the law.

Many meetings have been held during the year with the women's clubs throughout the state. Conferences have been held repeatedly with the various tuberculosis societies in the state. Addresses have been given at school trustees' meetings and several county institutes. The director spoke at the state meeting of the supervisors. Meetings have been held with the labor unions also. But the aim of the bureau at the present time must be two direct points of attack: one on the preventive side—to continue the educational campaign, with the education of physicians, nurses, school children and the patients—the other to continue the medical inspection of school children for minor physical defects. Second, to provide as rapidly as possible in every section of the state, a sufficient number of hospital beds for patients suffering in any stage of the disease. These hospitals will make it possible to bring about the proper care of all tuberculosis patients in each county. The semiphilanthropic institutions, the Barlow Sanatorium at Los Angeles, Arequipa in Marin County, La Vina near Pasadena and Duarte have been inspected. They are carrying a great burden of work that must be done by the counties as rapidly as possible.

Table of Subsidized Hospitals.

	1915—Number of Beds	1916—Number of Beds
San Joaquin-----	40	*44
Fresno-----	18	‡48
Los Angeles-----	250	†290

Number of Beds in County Institutions Operating Under the Subsidy.

San Joaquin-----	44
Fresno-----	48
Los Angeles-----	53
Sacramento-----	40
San Francisco-----	83
	258

The Interior Department has been appealed to, to establish a hospital for Indians suffering with tuberculosis, and at the request of the commissioner, the bureau has recommended a site at North Fork near the Indian Mission.

*Increase in bed capacity not a notable one, but the subsidy has made this hospital first class.

‡Thirty extra beds as a result of the subsidy.

†New building.

REPORT OF THE BUREAU OF REGISTRATION OF NURSES.

By ANNA C. JAMMÉ, R.N., Director.

Introduction.

The act authorizing the examination and certification of graduate nurses became effective October 14, 1913. During the first ten months, or until July 1, 1914, nurses were registered without examination and received certificates, who showed evidence of having graduated from a reputable training school connected with a general hospital. During this period 4,831 nurses received certificates as "Registered Nurses."

With the beginning of the biennial period July, 1914, applicants for registration were obliged to show satisfactory evidence of having graduated from an accredited school for nurses and to pass the examination conducted by the board. It, therefore, became necessary to inspect and accredit the training schools.

Inspection of Training Schools for Nurses.

Inspection of schools was commenced July 6, 1914. From this date to July, 1915, 81 schools were inspected. From July, 1915, to July, 1916, 73 schools were inspected and a total of 86 inspections made. The inspection includes the following points:

(1) Character of hospital with which school is connected, whether general or special; (2) capacity and daily average number of patients; (3) nature of services, as medical, surgical, obstetrical and children's services; (4) equipment; (5) educational requirements for admission of students; (6) number and qualification of nurse instructors; (7) equipment for teaching as class rooms, demonstration rooms, library, diet kitchen, laboratory, etc.; (8) nature and amount of instruction, and plan followed in practical instruction.

Report of each inspection is made to the State Board of Health.

Accrediting of Training Schools.

On inspection, 73 schools were found to meet the minimum requirements and have been placed upon the accredited list. Nine schools were found not to meet the requirements, and were, therefore, not accredited.

Students in Training.

The number of students in training in the 73 accredited schools are 2,465. The educational status of these students is: graduates of a college or high school, 848; those having had but three years of high school, 278; those having had but two years, 435; those having had but one year, 308; those having attended grammar school, 484.

Requirements for Accredited Training Schools.

On April 8, 1916, the following requirements for accredited training schools were approved:

I. The hospital.

The hospital with which the school is connected shall have a capacity of not less than 50 beds and a daily average of 25 patients.

It shall provide for teaching and experience in surgical and medical nursing and in children's diseases. Each student must have the care of not less than six maternity cases including labor and delivery and the care of the infant.

It shall provide proper and adequate facilities for class instruction, such as a working library in which is included the more modern text and reference books, a skeleton, a manikin, or charts and such auxiliary apparatus as the hospital may be able to afford. The classroom must be well lighted and provided with student's tablet chairs and a good-sized blackboard. There must be a demonstration room and demonstration equipment as outlined in the pamphlet "Elementary Nursing Procedures." It shall provide a diet kitchen and the necessary equipment for teaching purposes. It shall provide the necessary laboratory equipment for the teaching of chemistry, bacteriology and analysis of urine.

II. Nurses' home.

Proper living conditions must be provided for the students. These must include a building erected for the purpose, or, where this is not possible, one suitable and adequate. Dormitories in upper story or basement of hospital will not be considered.

There must be individual sleeping rooms, or where rooms are sufficiently large, two may occupy the same room. Sleeping porches are strongly recommended in addition to the regular sleeping rooms. Sufficient furniture and one closet for each student.

One bath and one toilet for every ten students.

A reception room, a library, and when possible, a good-sized recreation room.

The nurses' home should be attractively but not expensively furnished. The service should be sufficient to maintain it in an orderly manner and provisions should be made for the social life of the school.

III. Dining rooms.

This room should be clean, well lighted and suitably furnished. The service should be prompt and efficient during the meals. There should be at least one waiter, or waitress, to every twenty students.

The diet should be adapted to students engaged in arduous and exacting studies.

IV. Faculty.

A sufficient force of instructors must be maintained who are competent to conduct the instruction herein specified and shall consist of:

1. Superintendent of the training school who is a registered nurse and must possess qualifications requisite for the administration of the school. She must have ability for teaching, capability for guiding the students in moral discipline and be able to maintain a high standard of educational and moral efficiency in the school.

2. A graduate night superintendent who is capable of assuming responsibility and of teaching the students under her supervision.

3. A full time nurse instructor in a school of over twenty-five students.
4. A graduate surgical nurse who has charge of the operating room.
5. A staff of medical and other lecturers.
6. A dietitian, who may or may not be, a graduate nurse.

V. Records.

There must be a good system of keeping records, showing in detail qualifications for admission, physical condition and character, instruction, attendance at lectures, classes, demonstrations, practice and efficiency in class and bedside work. This complete record of each student must be kept from time of admission to graduation. Immediately on the completion of the course, a copy of this record must be made on the form provided and forwarded to the State Board of Health at Sacramento.

VI. Affiliations.

Schools unable to meet the requirements of any one major subject will affiliate with another approved institution giving the required experience.

Arrangements for the time in affiliating institutions must harmonize with the course of instruction in each school and should not occur during the vacation period. All affiliations must be approved by the State Board of Health.

Examinations.

Five examinations for certificate as "Registered Nurse" have been held during the biennial period. The following table shows the dates, the number who entered, passed and failed:

Dates	Number entered	Passed	Failed	Percentage of successful applicants
December 5, 1914.....	46	42	4	91.14
May 1, 1915.....	86	84	2	97.58
October 13, 1915.....	138	104	34	75.40
February 8-9, 1916.....	119	104	15	87.54
June 13-14, 1916.....	197	152	45	77.31

Certificates.

Certificates as Registered Nurse have been issued:

Years	On examination	Without examination (Reciprocity)	Total
1914-1915.....	126	12	138
1915-1916.....	360	21	381
			519

Publications of the Bureau.

The following publications have been issued during the biennial period as special bulletins:

1. Register of Nurses.....	Jan. 2, 1915
2. Survey of Training Schools for Nurses.....	July 3, 1915
3. Elementary Nursing Procedures.....	Dec. 10, 1915
4. Requirements and Curriculum for Schools of Nursing.....	July 1, 1916
5. Annotated List of Text and Reference Books for Schools of Training	July 1, 1916

Development of the Work.

The work of the bureau has steadily increased during the past two years. The regular work of the office, as routine correspondence, preparation for examinations, correcting examination papers, etc., has grown month by month. The bureau has become, as it were, a clearing house for the state on questions pertaining to nursing. Inspection of schools, which constitutes a most important part of the usefulness of the bureau occupies about two-thirds of the time of the Director, and it has, therefore, been considered necessary that an assistant be appointed. An examination for the position was held by the State Civil Service Commission and from the eligible list submitted, Miss Elizabeth Pack, R.N., graduate of the Children's Hospital, San Francisco, was appointed by the State Board of Health as assistant to the director. She assumed her duties on July 1, 1916.

SUMMARY.

The work of the bureau is now past the initial stage of organization and is well established. The most cordial cooperation from the beginning, has been extended by the schools in endeavoring to meet the requirements. Interest in the examinations has been shown by the instructors and those interested in the students. The examination is a test of the ability of the student to practice nursing.

It is anticipated that the influence of this work will increase the efficiency of the student nurse in the hospital in caring for its patients because the student will be better taught both in the class room and at the bedside; also, that it will lead to a stronger development of the student for her work after she has finished her course.

REPORT OF BUREAU OF VITAL STATISTICS.

GEORGE D. LESLIE, Director.

I. SUMMARY OF STATISTICS: 1915 AND 1914.*

SYNOPSIS.

Birth, Death and Marriage Totals.—The California birth total has much more than doubled since the first year's registration of 20,974 for 1906, having risen steadily to 46,012 for 1914, and 48,075 for 1915.

The excess of births over deaths first shown in 1911 was as great as 9,049, or 23.2 per cent, in 1915.

The death total, exclusive of stillbirths, has oscillated slightly since the start at 29,303 in 1906, being 37,537 in 1914 and 39,026 in 1915.

The marriages have fluctuated greatly from the total of 21,317 for 1906, numbering 31,902 for 1914, but only 31,451 for 1915.

In 1914 to 1915, births increased by 2,063, or 4.5 per cent, and deaths by only 1,489, or 4.0 per cent, while marriages decreased by 451. or 1.4 per cent.

The birth rate has grown steadily ever since 1906, while the death and marriage rates each fell at times in the ten-year period.

In 1914 to 1915 the gain in births was greatest for northern and next for central California, while the increase in deaths was somewhat greater for southern than for either northern or central California. The decrease in marriages appeared in all geographic divisions except San Francisco and southern California outside Los Angeles.

Increases appeared for forty of the whole fifty-eight counties in births, and for thirty-five in deaths, but for only twenty-five in marriages.

The rates of gain in births were over 10.0 in the following twenty-nine counties: San Benito, Orange, Tuolumne, Mariposa, Sutter, Del Norte, Imperial, Lassen, Plumas, Modoc, Merced, Ventura, Mendocino, Santa Barbara, Contra Costa, Yuba, Placer, Tulare, Nevada, Kings, Lake, Monterey, Santa Clara, Amador, Napa, Colusa, Marin, San Bernardino, and San Joaquin.

The increases in deaths were over 10.0 per cent in only eleven counties as follows: Plumas, Lake, Colusa, Yuba, Mono, Merced, Kings, Placer, Stanislaus, Napa, and Ventura.

There were gains in marriages of over 10.0 per cent in the following fifteen counties: Alpine, Trinity, Mono, Del Norte, Mariposa, Yuba, Plumas, Riverside, Nevada, Napa, Solano, El Dorado, San Joaquin, Madera, and San Diego.

For freeholders' charter cities as a class there was a decrease in births of 0.1 per cent but an increase in deaths of 5.8 per cent, while for all the rest of the state the rate of gain was 12.0 in births against merely 1.3 in deaths. The marked gains in births for the state outside chartered cities are due to notable completeness in birth returns for other

*NOTE.—The vital statistics are presented for calendar, instead of fiscal years, to correspond with the annual mortality reports of the Federal Census Bureau.

cities and towns first made separate birth registration districts under the new law of 1915.

Increases in births were shown by only fifteen of thirty-two chartered cities, but in deaths by twenty-three of these cities.

The fifteen cities showing gains in births were: Monterey, Grass Valley, Santa Barbara, Stockton, Salinas, Richmond, San Bernardino, Napa, Alameda, San Rafael, Watsonville, Santa Monica, Oakland, San Diego, and Pomona.

The increases in deaths exceeded the city average of 5.8 per cent in the following fourteen cities: Napa, Modesto, Stockton, Santa Rosa, San Luis Obispo, Monterey, Santa Monica, San Rafael, Berkeley, Richmond, Petaluma, Pasadena, Palo Alto, and San Diego.

Birth and Death Totals Compared.—The birth registration exceeded the death total in both 1915 and 1914 for all geographic divisions except only the coast counties of northern California, the total excess of births over deaths being as great as 9,049 or 23.2 per cent, in 1915, against 8,475, or 22.6 per cent, in 1914.

The excess of births over deaths for chartered cities was only 19.9 per cent in 1915, though 26.9 per cent in 1914, the corresponding figures for the rest of California being 28.3 in 1915 against only 16.0 in 1914.

More births than deaths were reported in both 1915 and 1914 for twenty-three cities as follows: Eureka, Napa, Petaluma, and Santa Rosa in northern California; San Francisco, Alameda, Berkeley, Oakland, Richmond, San Rafael, Palo Alto, San Jose, Watsonville, Fresno, Sacramento, and Vallejo in central California; and Los Angeles, Long Beach, Pasadena, Pomona, Santa Monica, Riverside, and San Diego in southern California.

The thirty-four chartered cities in 1915 and the thirty-two in 1914 reported altogether 59.4 and 62.1 per cent of the birth registration for the whole state, as compared with 61.0 and 60.0 per cent, respectively, of the California death total.

Birth, Death and Marriage Rates.—For 1915 and 1914, respectively, the California birth rates per 1,000 population were 16.8 and 16.7, the death rates 13.7 and 13.6, and the marriage rates 11.0 and 11.5. The latest birth rates mark the highest points attained since 1906, but the death rates for 1914 and 1915, like those for 1909 to 1911, stand below the high rates for 1912 and 1913 or for 1906 to 1908. The marriage rates for 1914 and 1915, like that for 1911, are between the maximum rates for 1912 and 1913 and the lower rates for 1906 to 1910.

The birth, death and marriage rates, especially births, are considerably higher for southern California than for central or northern California.

The rates in each case are generally higher for the metropolitan area than for the rural counties north of Tehachapi as well as for San Francisco than for the other bay counties.

The individual counties with birth rates above the state averages in both 1915 and 1914 were: Stanislaus, Sacramento, Madera, Fresno, Imperial, Orange, San Diego, Los Angeles, Lassen, Merced, and Yolo.

The counties with death rates above the general averages in both years were: Napa, San Joaquin, San Diego, San Bernardino, Santa Clara, Imperial, San Francisco, El Dorado, Sacramento, Orange, Nevada, Yolo, and Los Angeles.

Orange and Marin, near Los Angeles and San Francisco, invariably show by far the highest marriage rates. Other counties with marriage rates above the state averages in the last two years were: San Diego, San Francisco, San Joaquin, Imperial, Sacramento, and Lassen.

In 1915 the birth rate was about the same for chartered cities as for the rest of the state, 16.9 against 16.7, though in 1914 this rate was much higher within cities than outside them, 17.9 against only 15.0.

In both years, however, the death rate was considerably greater for chartered cities, 14.1 each year, than for the rest of the state, 13.0 in 1915 and 12.9 in 1914.

Between 1914 and 1915, while the death rate stood still both within and outside cities, the birth rate dropped sharply for chartered cities while rising greatly for the rest of the state. With the marriage rate decreasing in recent years the birth rate may have decreased actually also as indicated by figures for leading chartered cities, though any real decrease has been more than overcome by marked completeness in birth returns for smaller cities and towns under the new registration law.

The birth rates equalled or exceeded the city averages both years in Watsonville, Richmond, Modesto, Fresno, San Bernardino, Santa Rosa, San Diego, Sacramento, Santa Monica, San Luis Obispo, Long Beach, Petaluma, and Los Angeles.

The death rates surpassed the average for cities each year in Modesto, Stockton, San Bernardino, San Diego, Richmond, Santa Monica, San Luis Obispo, Santa Barbara, Santa Rosa, Long Beach, Eureka, San Francisco, Sacramento, Watsonville, and Grass Valley.

On the other hand, there were relatively low death rates in both 1915 and 1914 for Palo Alto, Berkeley, Monterey, Alameda, Pasadena, Oakland, Riverside, Vallejo, San Jose, Los Angeles, Petaluma, San Rafael, and Pomona.

INTRODUCTION.

Sources of Information.—The California laws of 1905 and 1915 for the registration of vital statistics require the prompt reporting of every birth, death or marriage occurring in the state by the immediate filing of a prescribed form of certificate for each such event with the proper local registrar for transmittal in monthly returns to the State Bureau of Vital Statistics. The local registrars for both births and deaths under the new registration law in effect from August 8, 1915, are the health officers of cities having freeholders' charters and the clerks in other cities and towns, city and town clerks having been local registrars for deaths alone under the former law of 1905. Each county recorder, besides being local registrar for all marriages anywhere in the county, is also local registrar for both births and deaths occurring outside freeholders' charter and all other cities and incorporated towns. County recorders as local registrars of deaths for the unincorporated portions of counties furthermore appoint subregistrars to receive death certificates and issue burial or removal permits at points remote from county seats.

The present California law of 1915 requires a physician or other person assisting at a birth to file a certificate, properly filled out, within thirty-six hours thereafter with the health officer for a birth occurring in any freeholders' charter city, with the clerk for a birth

occurring in any other city or incorporated town, or with the county recorder for a birth taking place in the outside or unincorporated portion of a county. To cover any case of a birth occurring without the attendance of a physician, midwife or nurse, the law of 1915 also requires that the fact of the occurrence of a birth shall be reported to the local registrar within ten days thereafter by the father or mother of the child, the householder or owner of the premises where the birth occurred, or the manager or superintendent of the public or private institution where the birth occurred, each in the order named.

As to deaths, the state law of 1915 like that of 1905 holds each undertaker responsible for obtaining and filing a satisfactory death certificate with the local registrar (or subregistrar) of the district where any death occurs prior to the interment or other disposition of the body, or within seventy-two hours after death, the statute forbidding any disposition of the remains except by authority of the local registrar's (or subregistrar's) permit obtainable only by the filing of a complete and satisfactory death certificate. Under the present law the local registrars for deaths are the same as for births with the addition as before of subregistrars of death for portions of rural registration districts.

With reference to marriages, the California law found in code amendments adopted in 1905 requires all persons who perform the marriage ceremony in this state to file the prescribed form of marriage certificate, properly filled out, with the county recorder as local registrar within three days after the performance by them of any marriage ceremony.

Indexing of Records.—The original certificates of births, deaths and marriages thus filed with local registrars each month are required by law to be forwarded to the State Registrar on the fifth day of the following month. In the State Bureau of Vital Statistics the births, deaths and marriages throughout California are indexed separately and systematically on appropriate cards sorted and arranged by names in alphabetical order carried to minute subdivisions. For the period from about July 1, 1905, when the system was established, to the end of 1915, the index cards for California aggregate nearly 400,000 for births, about 350,000 for deaths, and over 500,000 for marriages, the marriage index cards being made in duplicate and then sorted separately to cover both grooms and brides. Beginning with August, 1915, the birth index cards have also been made in duplicate and arranged alphabetically by the names of fathers and maiden names of mothers. For ten and a half years there are thus altogether 1,250,000 index cards on file in the state bureau as references to official legal records of children born, persons dead, and couples married in California.

Tabulation of Statistics.—In the State Bureau of Vital Statistics the statistical information on the original birth certificates there filed has been tabulated to the present time merely by direct tallying of certain items from the original certificates. Likewise, statistical data have been compiled as yet from the original marriage certificate simply by sorting and counting the certificates in selected groups. The birth and marriage tabulations are thus necessarily limited within a somewhat restricted range permitting no further expansion.

For deaths, however, tabulation cards have been in use since the organization of the state bureau in 1905 which allow a wide range in

the scope of statistical tabulations relating to mortality. In the California Bureau of Vital Statistics the statistical data on the death certificates are transferred to tabulation cards such as are used in the Federal Census Bureau by means of a punching machine. The tabulation cards are punched to show for each death the following particulars: Sex, color (or race), month of death, age, conjugal (or marital) condition, birthplace, birthplace of father, birthplace of mother (by countries for the foreign born), occupation, cause of death, and length of residence in California. Occupations and causes of death are necessarily designated by index numbers, the key for occupations being like that used in the Vital Statistics Division of the Federal Census Bureau, and the key for deaths agreeing with the International Classification of Causes of Death. Each tabulation card also shows, by certain holes punched according to a definite system, the registration district (the county and the freeholders' charter city or other city or town), as well as the local registered number of the certificate to which the card corresponds.

Although the tabulation cards are meant to be sorted and counted by electrical tabulating devices such as are used in the Federal Census Bureau and other statistical offices, the cards in the California Bureau of Vital Statistics have heretofore been sorted and tabulated only by hand. On this account the tabulations have necessarily been limited to causes of death, and, in addition, to only sex, race, nativity (of white decedents), age periods, occupations, and marital or conjugal condition. Because of the lack of clerical assistance it has also been impossible to make these detailed tabulations for leading cities or individual counties, but only for certain geographic divisions, data being published in some cases merely for the state as a whole. However, total deaths have been tabulated by causes for freeholders' charter cities as well as for all counties in both 1915 and 1914.

Geographic Divisions.—For convenience in tabulation the fifty-eight counties of California have been grouped in three main and eight minor geographic divisions. The three main divisions are northern, central, and southern California. The line between northern and central California has been drawn at the southern boundary of Placer, Sutter, Colusa, Napa, and Sonoma counties, or the northern boundary of El Dorado, Sacramento, Yolo, and Marin counties. This dividing line extends irregularly from Lake Tahoe to the Pacific Ocean somewhat north of San Francisco Bay. The line between central and southern California has been drawn at the southern boundary of Inyo, Kern, and San Luis Obispo counties, or the northern boundary of San Bernardino, Los Angeles, Ventura, and Santa Barbara counties. This line is familiarly located by Tehachapi pass.

In both northern and central California, divisions have been made between the coast and the interior counties. In each case the coast counties include some counties not actually contiguous to the Pacific Ocean but yet on the westward side of the Coast Range. Moreover, in central California, San Francisco and the other bay counties (Alameda, Contra Costa, Marin, and San Mateo) have been made minor geographic divisions. Similarly, in southern California, Los Angeles has been

made a minor geographic division in contrast with the other seven counties south of Tehachapi.

The three main and eight minor geographic divisions are as follows, the counties in each group being arranged alphabetically for the sake of ready reference:

TABLE 1.—Main and Minor Geographic Divisions of California, with Counties Included in Each.

NORTHERN CALIFORNIA.			
<i>Coast counties.</i>			
Del Norte	Lake	Napa	Trinity
Humboldt	Mendocino	Sonoma	
<i>Interior counties.</i>			
Butte	Modoc	Shasta	Sutter
Colusa	Nevada	Sierra	Tehama
Glenn	Placer	Siskiyou	Yuba
Lassen	Plumas		
CENTRAL CALIFORNIA.			
<i>San Francisco.</i> (City and county)			
<i>Other bay counties.</i>			
Alameda	Contra Costa	Marin	San Mateo
<i>Coast counties.</i>			
Monterey	San Luis Obispo	Santa Clara	Santa Cruz
San Benito.			
<i>Interior counties.</i>			
Alpine	Inyo	Merced	Stanislaus
Amador	Kern	Mono	Tulare
Calaveras	Kings	Sacramento	Tuolumne
El Dorado	Madera	San Joaquin	Yolo
Fresno	Mariposa	Solano	
SOUTHERN CALIFORNIA.			
<i>Los Angeles.</i>			
<i>Other counties.</i>			
Imperial	Riverside	San Diego	Ventura
Orange	San Bernardino	Santa Barbara	

BIRTH, DEATH AND MARRIAGE TOTALS.

The State.—Under the laws of 1905 and 1915 for the registration of vital statistics in California, returns are now available for the ten calendar years, 1906 to 1915, inclusive. Figures for the state as a whole are summarized in the table which follows, giving the birth, death and marriage totals, together with the increase and rate per 1,000 population, for the ten-year period covered by the operations of the present system.

TABLE 2.—Birth, Death and Marriage Totals, with Increase and Rate per 1,000 Population, for California: 1906 to 1915.

Year	Total	Increase		Rate per 1,000 population
		Number	Per cent	
Births.				
1915	48,075	2,063	4.5	16.8
1914	46,012	2,160	4.9	16.7
1913	43,852	4,522	11.5	16.4
1912	39,330	4,502	12.9	15.2
1911	34,828	2,680	8.4	14.0
1910	32,138	1,256	4.1	13.4
1909	30,882	2,806	10.0	13.4
1908	28,077	3,403	13.8	12.7
1907	24,674	3,700	17.6	11.6
1906	20,974			10.3
Deaths.				
1915	39,026	1,489	4.0	13.7
1914	37,537	*1,002	*2.8	13.6
1913	38,599	1,890	5.1	14.4
1912	36,709	2,697	7.9	14.2
1911	34,012	1,614	5.0	13.7
1910	32,398	1,413	4.6	13.5
1909	30,085	*302	*1.0	13.4
1908	31,287	192	0.6	14.1
1907	31,095	1,792	6.1	14.6
1906	29,303			14.4
Marriages.				
1915	31,451	*451	*1.4	11.0
1914	31,902	519	1.7	11.5
1913	31,383	107	0.3	11.7
1912	31,276	3,973	14.6	12.1
1911	27,303	2,366	9.5	11.0
1910	24,937	2,020	8.8	10.4
1909	22,917	1,178	5.4	9.9
1908	21,739	*1,266	*5.5	9.8
1907	23,005	1,688	7.9	10.8
1906	21,317			10.5

*Decrease.

While the death and marriage totals for California have fluctuated somewhat in the ten years, each having decreased twice at long intervals, the birth total has grown steadily in successive years, rising from 20,974 in 1906 to 24,674 in 1907, 28,077 in 1908, 30,882 in 1909, 32,138 in 1910, 34,828 in 1911, 39,330 in 1912, 43,852 in 1913, 46,012 in 1914, and 48,075 in 1915. Beginning with 1911, moreover, the aggregate birth registration in California has exceeded the annual death total in increasing degree, the excess of births over deaths rising from 816, or 2.4 per cent, in 1911 to 2,621, or 7.1 per cent, in 1912, to 5,253, or 13.6 per cent, in 1913, to no less than 8,475, or 22.6 per cent, in 1914, and even to 9,049, or 23.2 per cent, in 1915. Stillbirths are excluded from birth and death tabulations in all cases throughout this report.

The death total, exclusive of stillbirths, rose from 29,303 for 1906 to 31,095 for 1907 and to only 31,287 for 1908, falling back to 30,985 for 1909 but then rising again to 32,398 for 1910, 34,012 for 1911, 36,709 for 1912, and 38,599 for 1913, falling a second time to 37,537 for 1914 and finally rising once more to 39,026 for 1915. The increase of 1,792, or 6.1 per cent, for 1906 to 1907 was followed by a gain of only 192, or 0.6 per cent, for 1907 to 1908 and a loss of 302, or 1.0 per

cent, for 1908 to 1909, the death total for 1909 being thus less by 110 than that for 1907. However, the increase of 1,413, or 4.6 per cent for 1909 to 1910, was succeeded by the still greater gains of 1,614, or 5.0 per cent, for 1910 to 1911, of 2,697, or 7.9 per cent, for 1911 to 1912, and of 1,890, or 5.1 per cent, for 1912 to 1913. The decrease of 1,062, or 2.8 per cent, for 1913 to 1914 was followed by the greater increase of 1,489, or 4.0 per cent, for 1914 to 1915.

The marriage total, beginning with 21,317 for 1906, rose to an early maximum of 23,005 for 1907, dropping then to 21,739 for 1908, but rising thereafter to 22,917 for 1909, 24,937 for 1910, 27,303 for 1911, 31,276 for 1912, 31,383 for 1913, and 31,902 for 1914, this maximum for the ten-year period being followed by the somewhat smaller total of 31,451 for 1915. The early increase of 1,688, or 7.9 per cent, for 1906 to 1907 was followed by a decrease of 1,266, or 5.5 per cent, for 1907 to 1908 offset in part by the succeeding gain of 1,178, or 5.4 per cent, for 1908 to 1909. The gains in marriages were then successively greater, both absolutely and relatively, in the whole period 1909 to 1912, the increase being 2,020, or 8.8 per cent, for 1909 to 1910, 2,366, or 9.5 per cent, for 1910 to 1911, and 3,973, or 14.6 per cent, for 1911 to 1912. In 1912 to 1913, however, the increase in marriages was only 107, or 0.3 per cent, and in 1913 to 1914 the increase was likewise only 519, or 1.7 per cent. These small gains were followed by a decrease of 451, or 1.4 per cent, in 1914 to 1915. The small gains in 1913 and 1914 and the actual decrease in 1915, in connection with the sharp drop in the marriage total for 1908, indicate that there is a tendency for people to avoid matrimony during periods of financial stringency or uncertainty.

With reference to successive increases in births shown in Table 2, it must be remembered that the number and per cent of increase necessarily grow less and less as registration becomes more and more complete, since the early gains were swollen by improved registration while recent gains include little except the natural growth of population. Thus, the greatest relative increase shown is that of 3,700, or 17.6 per cent, for 1906 to 1907, due mainly to improved registration, while the greatest absolute increases, largely in births occurring, were those of 4,502, or 12.9 per cent, for 1911 to 1912 and of 4,522, or 11.5 per cent, for 1912 to 1913. The subsequent increases in birth totals of 2,160, or 4.9 per cent, for 1913 to 1914 and of 2,063, or 4.5 per cent, for 1914 to 1915, though apparently rather small, are really quite great in view of the fact that they appear for a period with the marriage total stationary or decreasing.

In fact, analysis of the increase in the California birth total for 1915 over 1914 shows that there were marked decreases in several leading cities in the state which were overcome only by the stimulus for improved completeness in birth registration produced by the new law in effect from August 8, 1915. The new law changed birth registration requirements particularly for the smaller cities and towns, as these places were now first constituted primary birth registration districts reporting directly to the central state bureau. The law was in operation only for the last five months of 1915 but the good results produced in that period were sufficient for decreases in birth totals in several leading cities for the whole year to be more than overcome by

marked improvements in the completeness of the registration of births in California in the closing months, especially notable as to births occurring in the smaller cities and towns of the state.

The birth rate per 1,000 population was highest of all, 16.8, for 1915 and next highest, 16.7, for 1914. Moreover, the birth rate has moved upward ever since 1906 without any break whatever, while the death and marriage rates have each suffered diminutions in the course of the ten-year period. Thus the death rates of 13.7 and 13.6 for 1915 and 1914, respectively, are about the same as the rates for 1909 to 1911, inclusive, and are somewhat less than the rates for 1912 and 1913 or for the earlier period, 1906 to 1908. Similarly, the marriage rates of 11.0 and 11.5 for 1915 and 1914, respectively, are less than the corresponding rates for both 1912 and 1913, though greater than the marriage rate for any year between 1906 and 1910, the rate for 1915 being exactly the same as that for 1911. In the ten years, 1906 to 1915, the minimum marriage rate was that of 9.8 for 1908 and the maximum was that of 12.1 for 1912.

Geographic Divisions.—The following table gives the birth, death and marriage totals for the several geographic divisions in the last two years, together with the number and per cent of increase for only births and deaths (marriages having decreased) in 1914 to 1915.

TABLE 3.—Birth, Death and Marriage Totals, with Increase in Births and Deaths, for Geographic Divisions: 1915 and 1914.

Geographic division	Births		Deaths		Marriages		Increase: 1914 to 1915			
							Number		Per cent	
	1915	1914	1915	1914	1915	1914	Births	Deaths	Births	Deaths
The State	48,075	46,012	39,026	37,537	31,451	31,902	2,063	1,489	4.5	4.0
Northern California..	4,562	4,208	4,101	3,957	2,497	2,650	359	144	8.5	3.6
Coast counties	1,923	1,869	2,088	2,014	1,269	1,349	114	74	6.3	3.7
Interior counties	2,639	2,394	2,013	1,943	1,228	1,301	245	70	10.2	3.6
Central California ...	25,499	21,335	20,803	20,089	17,328	17,318	1,164	714	4.8	3.6
San Francisco	7,624	7,646	7,259	6,910	6,817	6,216	*22	319	*0.3	4.6
Other bay counties...	6,075	5,842	4,706	4,576	4,152	4,250	233	130	4.0	2.8
Coast counties	3,034	2,671	2,610	2,472	1,665	1,903	363	135	13.6	5.6
Interior counties	8,766	8,176	6,228	6,101	4,694	4,949	500	127	7.2	2.1
Southern California..	18,014	17,474	14,122	13,491	11,026	11,934	540	631	3.1	4.7
Los Angeles	12,106	12,378	9,590	9,038	6,981	7,441	*272	552	*2.2	6.1
Other counties	5,908	5,096	4,532	4,453	4,045	4,493	812	81	15.9	1.8
Northern and Central California	30,061	28,538	24,904	24,046	19,825	19,968	1,523	858	5.3	3.6
Coast counties	18,656	17,968	16,663	16,002	13,903	13,718	688	661	3.8	4.1
Interior counties	11,405	10,570	8,241	8,044	5,922	6,250	835	197	7.9	2.4
Metropolitan area ...	13,609	13,488	11,965	11,516	10,969	10,466	211	449	1.6	3.9
Rural counties	16,362	15,060	12,939	12,530	8,856	9,502	1,312	409	8.7	3.3

*Decrease.

The increase shown for California as a whole in 1914 to 1915 (when marriages decreased by 451 or 1.4 per cent) was 2,063 or 4.5 per cent for births, but only 1,489 or 4.0 per cent for deaths.

The rate of gain in birth registration totals was greatest for northern California, 8.5, and next for central California, 4.8, against only 3.1 for southern California. There was a slight decrease in the birth total for San Francisco and a considerable drop in that for Los Angeles. However, the rate of gain in the birth total was highest among minor geographic divisions for southern California except Los Angeles, 15.9; next for the coast counties of central California, 13.6; and next for the interior counties of northern California, 10.2. The per cent of increase in the birth total was only 1.6 for the metropolitan area as compared with 8.7 for the rural counties north of Tehachapi.

The per cent of increase in deaths was 4.7 for southern California but only 3.6 for northern as well as for central California also. Among minor geographic divisions the per cent of increase was greatest for Los Angeles, 6.1; next for the coast counties of central California, 5.6; and next for San Francisco, 4.6. The per cent was 3.9 for the metropolitan area but only 3.3 for the rural counties of northern and central California.

It may be noted that the decrease in the marriage total for 1914 to 1915, mentioned heretofore as to the state, appeared in all main and minor geographic divisions except only San Francisco and southern California outside Los Angeles.

Counties.—Table 4 shows the birth, death and marriage totals for counties as well as the numerical increase in 1914 to 1915.

TABLE 4.—Birth, Death and Marriage Totals, with Increase, for Counties: 1914 to 1915.

County	Births		Deaths		Marriages		Increase: 1914 to 1915		
	1915	1914	1915	1914	1915	1914	Births	Deaths	Marriages
California	48,075	46,012	39,026	37,537	31,451	31,902	2,063	1,489	*
Alameda	4,600	4,519	3,677	3,559	2,864	2,883	81	118	*
Alpine	4	4	2	2	2	1	†	†	1
Amador	139	122	120	136	35	50	17	*	*
Butte	513	472	368	340	216	235	41	28	*
Calaveras	71	76	98	92	33	31	*	6	2
Colusa	140	125	108	85	40	51	15	23	*
Contra Costa	707	573	389	385	269	270	134	4	*
Del Norte	53	89	14	18	36	25	14	*	11
El Dorado	102	94	114	109	37	33	8	5	4
Fresno	1,983	1,827	1,071	1,061	865	966	156	*	*
Glenn	106	120	70	71	52	77	*	*	*
Humboldt	448	508	370	414	306	327	*	*	*
Imperial	421	324	270	319	216	256	97	*	*
Inyo	18	19	43	42	37	47	*	1	*
Kern	685	641	465	468	444	437	44	*	7
Kings	350	300	221	191	210	207	50	30	3
Lake	82	71	81	57	28	44	11	24	*
Lassen	110	85	60	67	59	62	25	*	*
Los Angeles	12,106	12,378	9,500	9,038	6,961	7,441	*	552	*
Madera	197	184	88	85	98	84	13	3	9
Marin	271	243	279	289	657	730	28	*	*
Mariposa	31	21	32	33	17	14	10	*	3
Mendocino	357	287	309	330	167	216	70	*	*
Merced	391	307	217	182	139	148	84	35	*
Modoc	110	86	39	68	64	75	24	*	*
Mono	1	9	6	5	3	2	*	1	1
Monterey	360	312	296	290	177	195	48	18	*
Napa	207	183	551	497	230	198	24	54	32
Nevada	187	156	219	223	97	82	31	*	15
Orange	1,185	992	620	602	1,401	1,355	493	18	46
Placer	374	307	251	221	89	86	67	30	3
Plumas	59	46	70	44	36	30	13	26	6
Riverside	611	622	468	440	482	402	*	28	80
Sacramento	1,628	1,666	1,165	1,225	945	1,164	*	*	*
San Benito	213	124	108	116	63	76	89	*	*
San Bernardino	1,211	1,093	1,148	1,139	726	749	118	9	*
San Diego	1,472	1,567	1,356	1,300	1,353	1,227	*	56	126
San Francisco	7,624	7,646	7,259	6,940	6,817	6,216	*	319	601
San Joaquin	1,031	936	1,118	1,066	794	715	95	82	79
San Luis Obispo	313	291	232	220	193	218	22	12	*
San Mateo	497	507	361	343	362	367	*	18	*
Santa Barbara	590	476	384	395	283	311	114	*	*
Santa Clara	1,673	1,463	1,562	1,477	956	1,142	210	85	*
Santa Cruz	475	481	410	379	276	272	*	31	4
Shasta	251	251	231	218	120	153	†	13	*
Sierra	38	42	37	42	12	13	*	*	*
Siskiyou	307	327	189	213	177	197	*	*	*
Solano	400	402	324	342	232	201	*	*	31
Sonoma	745	692	729	655	482	526	53	65	*
Stanislaus	616	603	359	316	259	268	13	43	*
Sutter	119	87	72	70	43	40	32	2	3
Tehama	166	160	145	147	107	104	6	*	3
Trinity	31	29	43	43	21	13	2	†	8
Tulare	828	689	445	419	345	382	139	26	*
Tuolumne	51	33	99	104	50	54	18	*	5
Ventura	418	332	286	258	184	193	86	28	*
Yolo	240	243	211	193	115	125	*	18	*
Yuba	159	130	163	134	116	96	29	29	20

*Decrease.

It appears from this table that in 1914 to 1915 the birth registration increased in as many as forty counties, remained stationary in two, and decreased in only sixteen. The death total rose in thirty-five counties, stood still in two, and fell off in twenty-one. The marriages increased in only twenty-five counties and decreased (as in the state as a whole) in thirty-three counties.

For the forty counties showing increases in births the rates of gain ranged as follows: San Benito, 71.8; Orange, 71.2; Tuolumne, 54.5; Mariposa, 47.6; Sutter, 36.8; Del Norte, 35.9; Imperial, 29.9; Lassen, 29.4; Plumas, 28.3; Modoc, 27.9; Merced, 27.4; Ventura, 25.9; Mendocino, 24.4; Santa Barbara, 23.9; Contra Costa, 23.4; Yuba, 22.3; Placer, 21.8; Tulare, 20.2; Nevada, 19.9; Kings, 16.7; Lake, 15.5; Monterey, 15.4; Santa Clara, 14.4; Amador, 13.9; Napa, 13.1; Colusa, 12.0; Marin, 11.5; San Bernardino, 10.8; San Joaquin, 10.1; Butte, 8.7; Fresno, 8.5; Sonoma, 7.7; San Luis Obispo, 7.6; Madera, 7.1; Kern and Trinity, each 6.9; Tehama, 3.8; Stanislaus, 2.2; Alameda, 1.8; and El Dorado, 0.9.

For the thirty-five counties reporting more deaths in 1915 than in 1914, the per cents of increase were as follows: Plumas, 59.1; Lake, 42.1; Colusa, 27.1; Yuba, 21.6; Mono, 20.0; Merced, 19.2; Kings, 15.7; Placer and Stanislaus, each 13.6; Napa and Ventura, each 10.9; Sonoma, 9.9; Yolo, 9.3; Butte and Santa Cruz, each 8.2; San Joaquin, 7.7; Calaveras, 6.5; Monterey and Riverside, each 6.4; Tulare, 6.2; Los Angeles, 6.1; Shasta, 6.0; Santa Clara, 5.8; San Luis Obispo, 5.5; San Mateo, 5.2; El Dorado and San Francisco, each 4.6; San Diego, 4.3; Madera, 3.5; Alameda, 3.3; Orange, 3.0; Sutter, 2.9; Inyo, 2.4; Contra Costa, 1.0; and San Bernardino, 0.8.

The per cents of increase in marriages for the twenty-five counties showing gains in 1914 to 1915 were as follows: Alpine, 100.0 (from 1 to 2); Trinity, 61.5 (from 13 to 21); Mono, 50.0 (from 2 to 3); Del Norte, 44.0; Mariposa, 21.4; Yuba, 20.8; Plumas, 20.0; Riverside, 19.9; Nevada, 18.3; Napa, 16.2; Solano, 15.4; El Dorado, 12.1; San Joaquin, 11.0; Madera, 10.7; San Diego, 10.3; San Francisco, 9.7; Tuolumne, 9.3; Sutter, 7.5; Calaveras, 6.5; Placer, 3.5; Orange, 3.4; Tehama, 2.9; Kern, 1.6; Santa Cruz, 1.5; and Kings, 1.4.

Cities.—Birth and death totals are available only for freeholders' charter cities, of which there were thirty-four in 1915, thirty-two in 1914 and 1913, thirty-one in 1912, twenty-nine in 1911, twenty-six in 1910 and 1909, and twenty-four in 1908 and 1907. The two additional cities for 1915 had totals as follows: Alhambra, 44 births and 87 deaths; and Bakersfield, 172 births and 286 deaths. The figures for these two cities do not prevent the totals for thirty-four cities in 1915 and thirty-one in 1914 from being quite closely comparable. The following table presents birth and death totals for the several chartered cities in 1915 and 1914, together with the number and per cent of increase in each case.

TABLE 5.—Birth and Death Totals, with Increase, for Individual Cities and Rest of State: 1915 and 1914.

City	Births		Deaths		Increase: 1914 to 1915			
	1915	1914	1915	1914	Number		Per cent	
					Births	Deaths	Births	Deaths
California	48,075	46,012	39,026	37,587	2,068	1,489	4.5	4.0
Freeholders' charter cities	28,569	28,594	23,821	23,525	*25	1,296	*0.1	5.8
Northern California:								
Eureka	237	245	228	223	*	5	*	2.2
Napa	119	111	116	84	8	32	7.2	38.1
Petaluma	117	147	90	80	*	10	*	12.5
Santa Rosa	178	187	157	129	*	28	*	21.7
Grass Valley	74	48	67	73	31	*	72.1	*
Central California:								
San Francisco	7,624	7,046	7,259	6,940	*	319	*	4.6
Alameda	443	414	299	290	29	9	7.0	3.1
Berkeley	766	813	498	435	*	58	*	13.3
Oakland	3,017	2,987	2,109	2,115	80	54	2.7	2.6
Richmond	323	284	180	142	44	18	15.5	12.7
San Rafael	107	101	92	80	6	12	5.9	15.0
Monterey	98	55	73	62	43	11	78.2	17.7
Salinas	58	47	55	58	11	*	23.4	*
San Luis Obispo	110	120	119	101	*	18	*	17.8
Palo Alto	48	66	30	28	*	2	*	7.1
San Jose	560	575	463	461	*	2	*	0.4
Santa Cruz	151	160	190	181	*	9	*	5.0
Watsonville	218	210	76	81	8	*	3.8	*
Fresno	707	781	377	430	*	*	*	*
Bakersfield	172		286		172	286		
Sacramento	1,253	1,290	997	1,086	*	*	*	*
Stockton	554	403	725	564	151	161	37.5	28.5
Vallejo	189	200	122	159	*	*	*	*
Modesto	124	139	145	109	*	36	*	33.0
Southern California:								
Los Angeles	7,997	8,222	5,853	5,644	*	209	*	3.7
Alhambra	44		87		44	87		
Long Beach	446	473	431	422	*	9	*	2.1
Pasadena	602	635	498	458	*	38	*	8.3
Pomona	201	200	169	144	1	25	0.5	17.4
Santa Monica	200	193	187	189	7	*	3.6	*
Riverside	274	299	217	219	*	*	*	*
San Bernardino	370	341	353	352	29	6	8.5	1.7
San Diego	1,018	1,101	1,003	946	17	57	1.7	6.0
Santa Barbara	296	206	232	260	89	*	43.2	*
Rest of State	19,506	17,418	15,206	15,012	2,088	193	12.0	1.3

*Decrease.

†Less than one-tenth of 1 per cent.

For chartered cities as a class the birth total was 28,569 in 1915 and 28,594 in 1914, a slight decrease of 25, or 0.1 per cent, being shown. The death total for cities was 23,821 in 1915 and 22,525 in 1914, the increase being 1,296, or 5.8 per cent.

For all the rest of the state the birth total was 19,506 in 1915 and 17,418 in 1914 (a gain of 2,088 or 12.0 per cent), while the death total was 15,205 in 1915 and 15,012 in 1914 (an increase of only 193 or 1.3 per cent). While the increase in the death total was very much greater, both numerically and proportionately, for chartered cities than for all the rest of the state, yet these cities actually showed a slight decrease in the birth total in contrast with a very marked gain in the birth total for the state outside such cities. An explanation is found in the fact that the new registration law of 1915 provided so great a stimulus for better reporting of births that decreases in several of the leading chartered cities were offset by returns of substantial completeness for the closing months from the smaller cities and towns, these being included in the table in totals for the state outside chartered cities.

Of the thirty-two chartered cities shown for both 1915 and 1914, only fifteen reported increases in birth registration for 1915 over 1914, while seventeen indicated decreases, those with decreased birth registration totals including populous cities like Los Angeles, San Francisco, Sacramento, Berkeley, Fresno, Pasadena, Long Beach, Riverside, and others. At the same time altogether twenty-three of the thirty-two cities reported more deaths in 1915 than in 1914, while only nine showed fewer deaths in the later year.

For the fifteen freeholders' charter cities showing increases in birth registration the rates of gain ranged as follows: Monterey, 78.2; Grass Valley, 72.1; Santa Barbara, 43.2; Stockton, 37.5; Salinas, 23.4; Richmond, 15.5; San Bernardino, 8.5; Napa, 7.2; Alameda, 7.0; San Rafael, 5.9; Watsonville, 3.8; Santa Monica, 3.6; Oakland, 2.7; San Diego, 1.7; and Pomona, 0.5.

For the twenty-three chartered cities reporting increased death totals the per cents of increase were as follows: Napa, 38.1; Modesto, 33.0; Stockton, 28.5; Santa Rosa, 21.7; San Luis Obispo, 17.8; Monterey, 17.7; Santa Monica, 17.4; San Rafael, 15.0; Berkeley, 13.3; Richmond, 12.7; Petaluma, 12.5; Pasadena, 8.3; Palo Alto, 7.1; San Diego, 6.0; Santa Cruz, 5.0; San Francisco, 4.6; Los Angeles, 3.7; Alameda, 3.1; Oakland, 2.6; Eureka, 2.2; Long Beach, 2.1; San Bernardino, 1.7; and San Jose, 0.4.

BIRTH AND DEATH TOTALS COMPARED.

Geographic Divisions.—Comparison of the birth and death totals for geographic divisions in 1915 and 1914, given in Table 6, shows that the birth registration exceeded the death total each year for every main and minor geographic division except only the coast counties of northern California. In this one group, moreover, the shortage of births below deaths was somewhat less in 1915 than in 1914. General improvement in the completeness of birth registration is indicated also by the fact that for the many geographic divisions reporting each year more births and deaths, except only San Francisco and Los Angeles, the excess of births over deaths was considerably greater, both numerically and proportionately, in 1915 than in 1914. Hence the excess of births

over deaths for California as a whole was no less than 9,049, or 23.2 per cent, in 1915 as compared with 8,475, or 22.6 per cent, in the preceding year.

The excess of births over deaths for Los Angeles was considerably less in 1915 than in 1914, while the corresponding excess for the rest of southern California was very much greater in the last year covered than in the year before. A similar contrast appears between the metropolitan area and the rural counties north of Tehachapi. The excess of births over deaths was somewhat less in 1915 than in 1914 for the metropolitan area but was considerably greater in the later year than in the year preceding for the rural counties of northern and central California.

The detailed figures for geographic divisions appear in Table 6, which follows:

TABLE 6.—Birth and Death Totals Compared, for Geographic Divisions: 1915 and 1914.

Geographic division	1915		1914		Excess of births over deaths			
	Births	Deaths	Births	Deaths	Number		Per cent	
					1915	1914	1915	1914
The State	48,075	39,026	46,012	37,537	9,049	8,475	23.2	22.6
Northern California	4,562	4,101	4,208	3,967	461	240	11.2	6.2
Coast counties	1,923	2,088	1,809	2,014	*165	*205	*7.9	*10.2
Interior counties	2,639	2,013	2,394	1,943	626	461	31.1	23.2
Central California	25,490	20,803	24,335	20,089	4,096	4,246	22.6	21.1
San Francisco	7,024	7,259	7,646	6,940	365	706	5.0	10.2
Other bay counties	6,075	4,706	5,812	4,576	1,309	1,236	29.1	27.7
Coast counties	3,034	2,610	2,671	2,472	424	199	16.2	8.1
Interior counties	8,766	6,228	8,176	6,101	2,538	2,075	40.8	34.0
Southern California	18,014	14,122	17,474	13,491	3,892	3,983	27.6	29.5
Los Angeles	12,106	9,590	12,378	9,038	2,516	3,340	26.2	37.0
Other counties	5,908	4,532	5,096	4,453	1,376	643	30.4	14.4
Northern and Central California..	30,061	24,904	28,538	24,046	5,157	4,492	20.7	18.7
Coast counties	18,656	16,663	17,968	16,002	1,998	1,966	12.0	12.3
Interior counties	11,405	8,241	10,570	8,044	3,164	2,526	38.4	31.4
Metropolitan area	13,069	11,965	13,488	11,516	1,734	1,972	14.5	17.1
Rural counties	16,362	12,939	15,050	12,530	3,423	2,520	26.5	20.1

*Shortage of births below deaths.

Cities.—Table 7 presents similar figures for the chartered cities (numbering thirty-four in 1915 and thirty-two in 1914) and for the rest of California.

TABLE 7.—Birth and Death Totals Compared, for Individual Cities and Rest of State: 1915 and 1914.

City	1915		1914		Excess of births over deaths			
	Births	Deaths	Births	Deaths	Number		Per cent	
					1915	1914	1915	1914
California	48,075	39,026	46,012	37,537	9,049	8,475	33.3	22.6
Freeholders' charter cities.....	28,569	23,821	28,594	22,525	4,748	6,069	19.9	26.9
Northern California:								
Eureka	237	228	245	223	9	22	3.9	9.9
Napa	119	116	111	84	3	27	2.6	32.1
Petaluma	117	90	147	80	27	67	30.0	83.8
Santa Rosa	178	157	187	129	21	58	13.4	46.0
Grass Valley	74	67	43	73	7	*	10.4	*
Central California:								
San Francisco	7,624	7,259	7,646	6,940	365	706	5.0	10.2
Alameda	443	299	414	290	144	124	48.2	42.8
Berkeley	766	493	813	435	273	378	55.4	86.9
Oakland	3,017	2,109	2,937	2,115	848	822	39.1	33.9
Richmond	328	190	284	142	108	142	105.0	100.0
San Rafael	107	92	101	80	15	21	16.3	26.3
Monterey	98	73	55	62	25	*	34.2	*
Salinas	58	55	47	58	3	*	5.5	*
San Luis Obispo.....	110	119	120	101	*	19	*	18.8
Palo Alto	48	80	66	28	18	38	60.0	135.7
San Jose	590	463	575	461	97	114	21.0	24.7
Santa Cruz	151	190	160	181	*	*	*	*
Watsonville	218	76	210	81	142	129	196.8	159.3
Fresno	707	377	731	430	330	301	87.5	70.0
Bakersfield	172	286					*	*
Sacramento	1,253	997	1,290	1,066	256	224	25.7	21.0
Stockton	564	725	403	564	*	*	*	*
Vallejo	189	122	200	159	67	41	54.9	25.8
Modesto	124	145	139	109	*	30	*	27.5
Southern California:								
Los Angeles	7,867	5,853	8,222	5,644	2,014	2,578	34.5	45.7
Alhambra	44	87			*	*	*	*
Long Beach	446	431	473	422	15	51	3.5	12.1
Pasadena	602	496	635	458	106	177	21.4	33.6
Pomona	201	109	200	144	32	56	18.9	33.9
Santa Monica	240	187	193	189	13	4	7.0	2.1
Riverside	274	217	299	219	57	80	26.3	36.5
San Bernardino	370	358	341	352	12	*	3.4	*
San Diego	1,018	1,003	1,101	946	15	155	1.5	16.4
Santa Barbara	295	232	206	260	63	*	27.2	*
Rest of State.....	19,506	15,205	17,413	15,012	4,301	2,406	28.3	16.0

*Shortage of births below deaths.

For chartered cities as a class the excess of births over deaths was only 4,748, or 19.9 per cent, in 1915 as compared with 6,069, or 26.9 per cent, in 1914. For all the rest of the state, however, the births exceeded the deaths by 4,301, or as much as 28.3 per cent, in 1915, against merely 2,406, or 16.0 per cent, in 1914. The diminishing excess of births over deaths shown for chartered cities in contrast with the growing excess of the same kind for the rest of the state is explained by the fact that improvements in the completeness of birth registration brought about by the new law of 1915 were specially noticeable in the smaller cities and towns on their being first made separate registration districts, these places being included in the table with that part of the state outside chartered cities.

Of the thirty-four chartered cities shown for 1915, twenty-eight reported more births than deaths, while of the thirty-two such cities in 1914 twenty-five showed an excess of births over deaths. Altogether twenty-three cities reported more births than deaths in both 1915 and 1914. These twenty-three cities were as follows: Eureka, Napa, Petaluma, and Santa Rosa in northern California; San Francisco, Alameda, Berkeley, Oakland, Richmond, San Rafael, Palo Alto, San Jose, Watsonville, Fresno, Sacramento, and Vallejo in central California; and Los Angeles, Long Beach, Pasadena, Pomona, Santa Monica, Riverside, and San Diego in southern California. The five cities which showed an excess of births over deaths for 1915 though not for 1914 were Grass Valley, Monterey, Salinas, San Bernardino, and Santa Barbara, while the two which showed such an excess for 1914 but not for 1915 were San Luis Obispo and Modesto.

Reference to Table 7 shows that the relative excess of births over deaths was notably great in certain cities with per cents as follows for 1915 and 1914, respectively: Watsonville, 186.8 and 159.3; Richmond, 105.0 and 100.0; Palo Alto, 60.0 and 135.7; Fresno, 87.5 and 70.0; Berkeley, 55.4 and 86.9; Alameda, 48.2 and 42.8; Oakland, 39.1 and 38.9; Petaluma, 30.0 and 83.8; Vallejo, 54.9 and 25.8; Los Angeles, 34.5 and 45.7; Riverside, 26.3 and 36.5; Pasadena, 21.4 and 38.6; Pomona, 18.9 and 38.9; Sacramento, 25.7 and 21.0; San Jose, 21.0 and 24.7; San Rafael, 16.3 and 26.3; and Santa Rosa, 13.4 and 45.0.

It may be observed from the above list that the relative excess of births over deaths was somewhat less in 1915 than in 1914 for several cities. In fact, only seven cities with an excess of births over deaths for both 1915 and 1914 showed the greater relative excess in the latest year covered, these seven cities being Watsonville, Richmond, Fresno, Alameda, Oakland, Vallejo, and Sacramento. There were also five other cities, Grass Valley, Monterey, Salinas, San Bernardino, and Santa Barbara, which showed an excess of births over deaths for 1915 in contrast with a shortage of births below deaths for 1914.

Of the remaining twenty cities shown for both 1915 and 1914 there were two, San Luis Obispo and Modesto, with fewer births reported than deaths for 1915 in contrast with an excess of births over deaths for 1914, as well as eighteen cities in which the relative excess of births over deaths appearing each year was less in the year last covered than in the year before. The eighteen with the excess of births over deaths relatively less in 1915 than in 1914 include populous cities as follows: Los Angeles, 34.5 in 1915 against 45.7 in 1914; San Francisco, 5.0 against 10.2; Berkeley, 55.4 against 86.9; Pasadena, 21.4 against 38.6; Long Beach, 3.5 against 12.1; San Jose, 21.0 against 24.7; Riverside, 26.3 against 36.5; and Pomona, 18.9 against 38.9.

It may be noted that of the total birth registration for all California altogether 59.4 per cent was reported by the thirty-four chartered cities in 1915 and 62.1 per cent by the thirty-two such cities in 1914. Similarly, of the total deaths in the state some 61.0 per cent occurred in the thirty-four chartered cities in 1915 and 60.0 per cent in the thirty-two cities of this class in 1914. From the greater per cent of total births than of total deaths shown for freeholders' charter cities in 1914, as well as from the much greater excess of births over deaths within cities than outside them in that year, it would seem that in the year

1914 birth registration was somewhat more complete within these leading cities than in the outside partly rural territory. However, from the smaller per cent of total births than of total deaths shown for chartered cities in 1915, as well as from the much smaller excess of births over deaths shown for such cities than for the rest of the state in this year, it would appear also that in the latest year covered, 1915, birth registration was probably less complete, or at least less notably improved, in the leading cities having freeholders' charters than in smaller cities and towns recently made separate birth registration districts, these smaller cities and towns being included in tabulations with that part of the state outside chartered cities.

BIRTH, DEATH AND MARRIAGE RATES.

Population Estimates.—Since the publication of the Federal Census results for 1910, population estimates can be obtained with strict accuracy on the basis of county and city totals for June 1, 1900, and April 15, 1910, the estimates being made for the sake of uniformity as of July 1, or the middle of each year. The estimated midyear population for both 1914 and 1915 has been calculated on the assumption that the numerical increase has been the same each month since April 15, 1910, as it was each month between June 1, 1900, and April 15, 1910. The average monthly increase is obtained by dividing the increase for the whole decade by 118.5 (the number of months between June 1, 1900, and April 15, 1910), and the total increase to July 1, 1914, is then got by multiplying by 50.5 (the number of months between April 15, 1910, and July 1, 1914), the increase to July 1, 1915, being obtained similarly by multiplying by 62.5 (the number of months between April 15, 1910, and July 1, 1915). The estimated midyear population for 1914 and 1915 is found, finally, by adding to the population enumerated April 15, 1910, the estimated increase to July 1, 1914 or 1915, as the case may be.

For the ten counties with few inhabitants showing decreases between 1900 and 1910, the census population of April 15, 1910, has been taken as the midyear estimate for both 1914 and 1915. Moreover, special estimates have been taken from reports of the Federal Census Bureau for seven cities (Berkeley, Oakland, San Jose, Fresno, Los Angeles, Pasadena and Sacramento) to cover corrections for territory annexed between 1900 and 1910 or since 1910.

The estimated midyear population for Alameda County, for instance, was obtained as follows:

Population enumerated April 15, 1910.....	246,131
Population enumerated June 1, 1900.....	130,197
Increase, June 1, 1900, to April 15, 1910 (118.5 months).....	115,934
Increase, April 15, 1910, to July 1, 1915 ($\times 62.5 \div 118.5$).....	61,145
Increase, April 15, 1910, to July 1, 1914 ($\times 50.5 \div 118.5$).....	49,406
Estimated midyear population, 1915.....	307,276
Estimated midyear population, 1914.....	295,537
Similarly, the estimated midyear population for Alameda City was obtained thus:	
Population enumerated April 15, 1910.....	23,383
Population enumerated June 1, 1900.....	16,464
Increase, June 1, 1900, to April 15, 1910 (118.5 months).....	6,919
Increase, April 15, 1910, to July 1, 1915 ($\times 62.5 \div 118.5$).....	3,649
Increase, April 15, 1910, to July 1, 1914 ($\times 50.5 \div 118.5$).....	2,949
Estimated midyear population, 1915.....	27,032
Estimated midyear population, 1914.....	26,332

Geographic Divisions.—The following table gives the estimated mid-year population, births, deaths and marriages, and rates per 1,000 population for the several geographic divisions in both 1915 and 1914.

TABLE 8.—Estimated Midyear Population, Births, Deaths and Marriages, and Rates per 1,000 Population, for Geographic Divisions: 1915 and 1914.

Geographic division	Estimated midyear population	Births	Deaths	Marriages	Rate per 1,000 population		
					Births	Deaths	Marriages
1915.							
The State -----	2,854,727	48,075	30,026	31,451	16.8	13.7	11.0
Northern California -----	322,800	4,562	4,101	2,497	14.1	12.7	7.7
Coast counties -----	149,612	1,923	2,068	1,200	12.9	14.0	8.5
Interior counties -----	173,278	2,639	2,013	1,228	15.2	11.6	7.1
Central California -----	1,544,716	25,499	20,803	17,328	16.5	13.5	11.2
San Francisco -----	456,010	7,624	7,259	6,817	16.7	15.9	14.9
Other bay counties -----	410,444	6,075	4,706	4,152	14.8	11.5	10.1
Coast counties -----	180,665	3,084	2,610	1,665	16.8	14.4	9.2
Interior counties -----	497,567	8,786	6,228	4,604	17.6	12.5	9.4
Southern California -----	987,121	18,014	14,122	11,626	18.2	14.3	11.8
Los Angeles -----	680,208	12,106	9,590	6,961	17.8	14.1	10.3
Other counties -----	306,918	5,908	4,532	4,645	19.2	14.8	15.1
Northern and Central Cali- fornia -----	1,867,606	30,061	24,904	19,825	16.1	13.3	10.6
Coast counties -----	1,196,761	18,656	16,663	18,903	15.6	13.9	11.6
Interior counties -----	670,845	11,406	8,241	5,922	17.0	12.3	8.8
Metropolitan area -----	866,454	18,699	11,965	10,969	15.8	13.8	12.7
Rural counties -----	1,001,152	16,362	12,939	8,856	16.3	12.9	8.8
1914.							
The State -----	2,763,109	46,012	37,537	31,902	16.7	13.6	11.5
Northern California -----	318,202	4,208	3,967	2,650	13.2	12.4	8.3
Coast counties -----	147,234	1,809	2,014	1,349	12.3	13.7	9.2
Interior counties -----	170,968	2,394	1,943	1,301	14.0	11.4	7.6
Central California -----	1,503,061	24,335	20,089	17,318	16.2	13.4	11.5
San Francisco -----	448,508	7,646	6,940	6,216	17.0	15.5	13.9
Other bay counties -----	394,904	5,842	4,576	4,250	14.8	11.6	10.8
Coast counties -----	176,960	2,671	2,472	1,903	15.1	14.0	10.8
Interior counties -----	482,694	8,176	6,101	4,949	16.9	12.6	10.3
Southern California -----	941,846	17,474	13,491	11,934	18.6	14.3	12.7
Los Angeles -----	646,397	12,378	9,088	7,441	19.1	14.0	11.5
Other counties -----	296,449	5,096	4,453	4,493	17.2	15.1	15.2
Northern and Central Cali- fornia -----	1,821,263	28,538	24,046	19,968	15.7	13.2	11.0
Coast counties -----	1,167,601	17,968	16,002	13,718	15.4	13.7	11.7
Interior counties -----	653,662	10,570	8,044	6,250	16.2	12.3	9.6
Metropolitan area -----	843,407	18,488	11,516	10,466	16.0	13.7	12.4
Rural counties -----	977,856	15,060	12,580	9,502	15.4	12.8	9.7

For California in 1915 and 1914 the estimated midyear population was 2,854,727 and 2,763,109, respectively, giving birth rates of 16.8 and 16.7, death rates of 13.7 and 13.6, and marriage rates of 11.0 and 11.5.

It may be added that for preceding years the estimated midyear population of California was as follows: 1913, 2,671,491; 1912, 2,579,874;

1911, 2,488,256; 1910, 2,396,639; 1909, 2,306,001; 1908, 2,215,615; 1907, 2,125,240; and 1906, 2,034,861. For populations thus estimated the birth rates were 16.4 for 1913, 15.2 for 1912, 14.0 for 1911, 13.4 for both 1910 and 1909, 12.7 for 1908, 11.6 for 1907, and 10.3 for 1906; the death rates were respectively, 14.4 (1913), 14.2, 13.7, 13.5, 13.4, 14.1, 14.6, and 14.4 (1906); and the marriage rates were, respectively, 11.7 (1913), 12.1, 11.0, 10.4, 9.9, 9.8, 10.8, and 10.5 (1906).

The birth rates for 1915 and 1914 thus mark the highest points attained in the upward movement of the California birth rate extending from 1906 without any break at all. The death rates for 1915 and 1914, however, are about the same as earlier rates for 1909 to 1911, inclusive, and are somewhat less than the rates for 1912 and 1913 or for an earlier period of 1906 to 1908. The marriage rates for 1915 and 1914 are less than preceding rates for 1913 and 1912, though greater than earlier rates for 1906 to 1910, the rate for 1915 being the same as that for 1911.

The birth rates for 1915 and 1914, as for previous years, are somewhat higher for the territory south of Tehachapi than for that to the north, being 18.2 and 18.6 for southern California against 16.1 and 15.7 for northern and central California together. The birth rates for central California alone were 16.5 in 1915 and 16.2 in 1914, but only 14.1 and 13.2 for northern California alone. The rates were lower in 1915, though higher in 1914, for Los Angeles than for the rest of southern California, as well as for the metropolitan area than for the rural counties north of Tehachapi. However, the birth rates were higher for San Francisco, 16.7 in 1915 and 17.0 in 1914, than for the other bay counties, 14.8 each year.

The death rates for 1915 and 1914 are slightly more for southern California, 14.3 each year, than for the territory north of Tehachapi, 13.3 and 13.2, being 13.5 and 13.4 for central California alone and 12.7 and 12.4 for northern California. Each year the death rate was somewhat higher for the metropolitan area than for the rural counties north of Tehachapi, and also much higher for San Francisco alone than for the group of suburban counties. However, the death rates were somewhat less both years for Los Angeles than for the other counties of southern California.

The marriage rates for 1915 and 1914 are somewhat higher for the territory south of Tehachapi than for that to the north, being 11.8 and 12.7 for southern California against 10.6 and 11.0 for northern and central California together. The rates were 11.2 in 1915 and 11.5 in 1914 for central California as compared with only 7.7 and 8.3 for northern California. The marriage rates were much higher both years for the metropolitan area than for the rural counties north of Tehachapi, and were likewise much higher for San Francisco alone than for the group of other bay counties. On the other hand, however, the rates were considerably lower for Los Angeles than for the rest of southern California.

Counties.—Table 9 presents similar figures on birth, death and marriage rates per 1,000 estimated midyear population for counties arranged alphabetically for the sake of ready reference.

TABLE 9.—Estimated Midyear Population, Births, Deaths and Marriages, and Rates per 1,000 Population, for Counties: 1915.

County	Estimated midyear population	Births	Deaths	Marriages	Rate per 1,000 population		
					Births	Deaths	Marriages
California	2,354,737	48,075	20,086	31,451	16.8	12.7	11.0
Alameda	307,276	4,600	3,677	2,864	15.0	12.0	9.3
Alpine	309	4	2	2	12.9	6.5	6.5
Amador	9,086	126	120	35	15.3	13.2	3.9
Butte	33,672	513	368	216	15.7	11.3	6.6
Calaveras	9,171	71	98	33	7.7	10.7	3.6
Colusa	7,926	140	108	40	15.3	11.8	4.4
Contra Costa	28,962	707	389	269	18.2	10.0	6.9
Del Norte	2,422	53	14	36	21.9	5.8	14.9
El Dorado	7,492	102	114	37	13.6	15.2	4.9
Fresno	96,591	1,963	1,071	866	20.7	11.2	9.4
Glenn	8,238	106	70	52	12.9	8.5	6.3
Humboldt	37,418	448	370	305	12.0	9.9	8.2
Imperial	17,466	421	270	216	24.1	15.5	12.4
Inyo	8,344	18	43	37	2.2	5.2	4.4
Kern	48,915	686	465	444	14.0	9.5	9.1
Kings	19,584	350	221	210	17.9	11.3	10.7
Lake	5,526	82	81	28	14.8	14.7	5.1
Lassen	4,955	110	60	59	22.2	12.1	11.9
Los Angeles	680,203	12,106	9,590	6,981	17.8	14.1	10.3
Madera	9,425	197	88	98	20.9	9.3	9.9
Marin	30,078	271	279	657	9.0	9.3	21.8
Mariposa	3,966	31	32	17	7.8	8.1	4.3
Mendocino	25,756	357	309	309	13.9	12.0	6.5
Merced	18,277	391	217	139	21.4	11.9	7.6
Modoc	6,779	110	39	64	16.2	5.8	9.4
Mono	2,042	1	6	3	0.5	2.9	1.5
Monterey	26,669	360	298	177	13.5	11.2	6.6
Napa	21,566	207	551	230	9.6	25.5	10.7
Nevada	14,955	187	219	97	12.5	14.6	6.5
Orange	42,210	1,185	620	1,401	28.1	14.7	33.2
Placer	19,530	374	251	89	19.2	12.9	4.6
Plumas	5,578	59	70	36	10.6	12.5	6.5
Riverside	43,556	611	468	482	14.0	10.7	11.1
Sacramento	79,352	1,623	1,165	945	20.5	14.7	11.9
San Benito	8,784	213	108	63	24.2	12.3	7.2
San Bernardino	71,894	1,211	1,148	726	16.8	16.0	10.1
San Diego	78,985	1,472	1,356	1,353	18.6	17.2	17.1
San Francisco	456,010	7,624	7,259	6,817	16.7	15.9	14.9
San Joaquin	58,790	1,081	1,148	794	17.5	19.5	13.5
San Luis Obispo	20,831	313	232	198	15.0	11.1	9.3
San Mateo	34,228	497	361	362	14.5	10.5	10.6
Santa Barbara	32,381	560	384	283	18.2	11.9	8.7
Santa Clara	96,840	1,673	1,562	966	17.5	16.3	10.0
Santa Cruz	28,581	475	410	276	16.6	14.3	9.7
Shasta	19,765	251	231	120	12.7	11.7	6.1
Sierra	4,141	88	37	12	9.2	8.9	2.9
Siskiyou	19,771	307	180	177	15.4	9.1	8.9
Solano	29,361	400	324	232	13.6	11.0	7.9
Sonoma	58,623	745	720	482	13.9	13.4	9.0
Stanislaus	29,364	616	359	259	21.0	12.2	8.8
Sutter	6,561	119	72	43	18.1	11.0	6.6
Tehama	11,615	166	145	107	14.3	12.5	9.2
Trinity	3,301	31	43	21	9.4	13.0	6.4
Tulare	44,441	823	445	345	18.6	10.0	7.8
Tuolumne	9,979	51	99	59	5.1	9.9	5.9
Ventura	20,446	418	286	184	20.4	14.0	9.0
Yolo	14,088	240	211	115	17.0	15.0	8.2
Yuba	10,792	159	163	116	14.7	15.1	10.7

TABLE 9 (Concluded).—Estimated Midyear Population, Births, Deaths and Marriages, and Rates per 1,000 Population: 1914.

County	Estimated midyear population	Births	Deaths	Marriages	Rate per 1,000 population		
					Births	Deaths	Marriages
California	2,763,109	46,012	37,537	31,902	16.7	13.6	11.5
Alameda	295,537	4,519	3,559	2,833	15.3	12.0	9.3
Alpine	309	4	2	1	12.9	6.5	3.2
Amador	9,096	122	136	50	13.4	15.0	5.5
Butte	31,641	472	340	235	14.9	10.7	7.4
Calaveras	9,171	76	92	31	8.3	10.0	3.4
Colusa	7,899	125	85	51	15.8	10.8	6.5
Contra Costa	37,482	573	385	270	15.3	10.3	7.2
Del Norte	2,421	39	18	25	16.1	7.4	10.3
El Dorado	7,492	94	109	33	12.5	14.5	4.4
Fresno	91,764	1,827	1,091	986	19.9	11.9	10.7
Glenn	8,034	120	71	77	14.9	8.8	9.6
Humboldt	36,735	508	414	327	13.8	11.3	8.9
Imperial	16,720	324	319	256	19.4	19.1	15.3
Inyo	8,081	19	42	47	2.4	5.2	5.8
Kern	46,765	641	468	437	13.7	10.0	9.3
Kings	18,940	300	191	207	15.8	10.1	10.9
Lake	5,526	71	57	44	12.8	10.3	8.0
Lassen	4,926	85	67	62	17.3	13.6	12.6
Los Angeles	646,397	12,378	9,038	7,441	19.1	14.0	11.5
Madera	9,222	184	85	84	20.0	9.2	9.1
Marin	29,125	243	289	730	8.3	9.9	25.1
Mariposa	3,966	21	33	14	5.3	8.3	3.5
Mendocino	25,405	287	330	216	11.3	13.0	8.5
Merced	17,676	307	182	148	17.4	10.3	8.4
Modoc	6,666	86	68	75	12.9	10.2	11.3
Mono	2,042	9	5	2	4.4	2.4	1.0
Monterey	26,176	312	280	196	11.9	10.7	7.4
Napa	21,227	183	497	198	8.6	23.4	9.3
Nevada	14,955	156	223	82	10.4	14.9	5.5
Orange	40,718	692	602	1,355	17.0	14.8	33.3
Placer	19,282	307	221	86	15.9	11.5	4.5
Plumas	5,516	46	44	30	11.0	8.0	7.2
Riverside	41,855	622	440	402	14.9	10.5	9.6
Sacramento	77,135	1,666	1,225	1,164	21.6	15.9	15.1
San Benito	8,641	124	116	76	14.4	13.4	8.8
San Bernardino	68,970	1,063	1,139	749	15.8	16.5	10.9
San Diego	75,653	1,567	1,300	1,227	20.6	17.2	16.2
San Francisco	448,503	7,646	6,940	6,216	17.0	15.5	13.9
San Joaquin	57,242	936	1,066	715	16.4	18.6	12.5
San Luis Obispo	20,553	291	220	218	14.2	10.7	10.6
San Mateo	32,760	507	343	367	15.5	10.5	11.2
Santa Barbara	31,490	476	396	311	15.1	12.5	9.9
Santa Clara	93,478	1,463	1,477	1,142	15.7	15.8	12.2
Santa Cruz	28,112	481	379	272	17.1	13.5	9.7
Shasta	19,603	251	218	153	12.8	11.1	7.8
Sierra	4,133	42	42	13	10.2	10.2	3.1
Siskiyou	19,585	327	213	197	16.7	10.9	10.1
Solano	29,015	402	342	201	13.9	11.8	6.9
Sonoma	52,619	692	656	526	13.2	12.4	10.0
Stanislaus	28,050	603	316	268	21.5	11.3	9.6
Sutter	6,516	87	70	40	13.4	10.7	6.1
Tehama	11,574	160	147	104	13.8	12.7	9.0
Trinity	3,301	29	43	13	8.8	13.0	3.9
Tulare	42,712	689	419	382	16.1	9.8	8.9
Tuolumne	9,979	33	104	54	3.3	10.4	5.4
Ventura	20,043	332	258	193	16.6	12.9	9.6
Yolo	14,067	243	198	125	17.3	13.7	8.9
Yuba	10,648	130	134	96	12.2	12.6	9.0

The individual counties with birth rates above the state averages of 16.8 and 16.7, in 1915 and 1914, respectively, are as follows: Stanislaus, 21.0 and 20.5; Sacramento, 20.5 and 21.6; Madera, 20.9 and 20.0; Fresno, 20.7 and 19.9; Imperial, 24.1 and 19.4; Orange, 28.1 and 17.0; San Diego, 18.6 and 20.6; Los Angeles, 17.8 and 19.1; Lassen, 22.2 and 17.3; Merced, 21.4 and 17.4; and Yolo, 17.0 and 17.3. The birth rate also equalled or exceeded the general average only for 1915 (16.8) in the following counties: San Benito, 24.2; Del Norte, 21.9; Ventura, 20.4; Placer, 19.2; Tulare, 18.6; Contra Costa and Santa Barbara each 18.2; Sutter, 18.1; Kings, 17.9; San Joaquin and Santa Clara each 17.5; and San Bernardino, 16.8. Similarly, the birth rate equalled or exceeded the state average for 1914 alone (16.7) in the following counties: Santa Cruz, 17.1; San Francisco, 17.0; and Siskiyou, 16.7.

Among the individual counties, Napa shows the highest death rates, 25.5 for 1915 and 23.4 for 1914, this unenviable prominence being explained, however, by the many deaths of aged persons occurring at the Napa State Hospital and the Veterans' Home of California located in this county of relatively small population. The death rates in 1915 and 1914, respectively, were next highest for the following counties: San Joaquin, 19.5 and 18.6; San Diego, 17.2 each year; San Bernardino, 16.0 and 16.5; Santa Clara, 16.3 and 15.8; Imperial, 15.5 and 19.1; San Francisco, 15.9 and 15.5; El Dorado, 15.2 and 14.5; Sacramento, 14.7 and 15.9; Orange, 14.7 and 14.8; Nevada, 14.6 and 14.9; Yolo, 15.0 and 13.7; and Los Angeles, 14.1 and 14.0. These are the counties with death rates above the state averages of 13.7 for 1915 and 13.6 for 1914. The death rate also surpassed the general average only for 1915 (13.7) in each of the following additional counties: Yuba, 15.1; Lake, 14.7; Santa Cruz, 14.3; and Ventura, 14.0. The death rate was also above the state average of 13.6 for 1914 alone in Amador, 15.0, and equal to it in Lassen, 13.6.

Among the individual counties, Orange adjoining Los Angeles shows by far the highest marriage rates, 33.2 in 1915 and 33.3 in 1914, while Marin adjoining San Francisco shows the second highest rates, 21.8 and 25.1 in 1915 and 1914, respectively. The marriage rates are also notably high for the following counties: San Diego, 17.1 and 16.2; San Francisco, 14.9 and 13.9; San Joaquin, 13.5 and 12.5; Imperial, 12.4 and 15.3; Sacramento, 11.9 and 15.1; and Lassen, 11.9 and 12.6. These are the counties with marriage rates above both state averages, 11.0 for 1915 and 11.5 for 1914. The marriage rates also surpassed the state average of 11.0 in 1915 alone for Del Norte (14.9) and Riverside (11.1), and likewise exceeded or equalled the general average of 11.5 in 1914 only for Santa Clara (12.2) and Los Angeles (11.5).

The counties mentioned as having high marriage rates will be recognized generally as counties having large cities. Moreover, the marriage rates are much higher for the metropolitan area than for the rural counties north of Tehachapi. It seems, therefore, that there is a strong tendency for marriageable persons living in the country to go to an urban center to be married; if not to the metropolis itself, then to the largest city accessible for a satisfactory celebration of the event. On the other hand, there is a counter movement by which couples living in metropolitan centers like Los Angeles or San Francisco select for their place of marriage not the metropolis proper, but instead a suburban city or town. This is indicated by the very great proportion of

marriages to resident population for Orange County adjacent to Los Angeles and for Marin in the suburbs of San Francisco. In short, country swains like to celebrate marriage in large cities, while couples living in metropolitan districts are inclined to prefer suburban places.

Cities.—Table 10 gives the birth and death rates per 1,000 estimated midyear population for the thirty-four freeholders' charter cities in 1915 and the thirty-two such cities in 1914, in comparison with all the rest of the state as a whole.

TABLE 10.—Estimated Midyear Population, Births and Deaths, and Rates per 1,000 Population, for Individual Cities and Rest of State: 1915 and 1914.

City	Estimated mid-year population		Births		Deaths		Rate per 1,000 population			
	1915	1914	1915	1914	1915	1914	Births		Deaths	
California	2,854,727	2,763,109	48,075	46,012	39,026	37,537	16.8	16.7	13.7	13.6
Freeholders' charter cities	1,686,815	1,600,884	28,569	28,594	23,821	22,525	16.9	17.9	14.1	14.1
Northern California:										
Eureka	14,228	13,770	237	245	223	223	16.7	17.8	16.0	16.2
Napa	6,717	6,539	119	111	116	84	17.7	17.0	17.3	12.8
Petaluma	6,940	6,786	117	147	90	80	16.9	21.8	13.0	11.9
Santa Rosa	8,420	8,305	178	187	157	129	21.1	22.5	18.6	15.5
Grass Valley	4,520	4,520	74	43	67	73	16.4	9.5	14.8	16.2
Central California:										
San Francisco	456,010	448,508	7,624	7,646	7,259	6,940	16.7	17.0	15.9	15.5
Alameda	27,032	26,332	443	414	299	290	16.4	15.7	11.1	11.0
Berkeley	54,879	52,108	766	813	498	435	14.0	15.6	9.0	8.3
Oakland	190,803	188,002	8,017	2,987	2,160	2,115	15.8	16.0	11.4	11.6
Richmond	8,355	8,069	328	284	160	142	39.3	35.2	19.2	17.6
San Rafael	7,018	6,810	107	101	92	80	15.2	14.8	13.1	11.7
Monterey	6,698	6,276	98	55	73	62	14.9	8.8	11.1	9.9
Salinas	3,964	3,920	58	47	56	58	14.6	12.0	13.9	14.8
San Luis Obispo	6,284	6,067	110	120	119	101	17.5	19.8	18.9	16.6
Palo Alto	5,078	5,691	48	66	80	28	8.0	11.6	5.0	4.9
San Jose	37,994	37,086	560	575	463	461	14.7	15.5	12.2	12.4
Santa Cruz	14,040	13,484	151	160	190	181	10.8	11.9	13.5	13.4
Watsonville	4,930	4,837	218	210	76	81	41.2	43.4	15.4	16.7
Fresno	30,978	29,809	707	731	377	430	22.8	24.5	12.2	14.4
Bakersfield	16,206		172		286		10.6		17.6	
Sacramento	64,806	62,717	1,233	1,290	997	1,066	19.3	20.6	15.4	17.0
Stockton	26,284	25,702	554	403	725	564	21.1	15.7	27.6	21.9
Vallejo	13,120	12,778	189	200	123	159	14.4	15.7	9.3	12.4
Modesto	5,094	4,891	124	139	145	109	24.3	28.4	28.5	22.3
Southern California:										
Los Angeles	465,362	438,914	7,367	8,222	5,853	5,644	16.9	18.7	12.6	12.9
Alhambra	7,070		44		87		6.2		12.3	
Long Beach	26,014	24,439	446	473	431	422	17.1	19.4	16.6	17.3
Pasadena	43,396	40,880	602	635	496	458	13.9	15.5	11.4	11.2
Pomona	12,676	12,202	201	200	169	144	15.9	16.4	13.3	11.8
Santa Monica	10,373	9,888	200	193	187	189	19.3	19.5	18.0	19.1
Riverside	19,030	18,297	274	299	217	219	14.4	16.3	11.4	12.0
San Bernardino	10,275	15,604	370	341	358	352	22.7	21.9	22.0	22.6
San Diego	51,117	48,901	1,018	1,101	1,003	946	19.9	22.5	19.6	19.3
Santa Barbara	14,334	13,920	295	206	232	260	20.6	14.9	16.2	18.8
Rest of State	1,167,882	1,162,225	19,506	17,418	15,205	15,012	16.7	15.0	13.0	12.9

The birth rate per 1,000 population was about the same in 1915 for chartered cities as a class, 16.9, as for all the rest of the state, 16.7, although the birth rate in 1914 was much higher within these cities, 17.9, than outside them, 15.0. In both years, however, the death rate was considerably greater for chartered cities, 14.1 each year, than for the rest of the state, 13.0 in 1915 and 12.9 in 1914. While the death rate remained stationary both for chartered cities and the rest of the state yet there appeared between 1914 and 1915 a sharp drop in the birth rate for chartered cities from 17.9 to 16.9 in contrast with a marked rise in the birth rate for the state outside these cities from 15.0 to 16.7. As the marriage rate has been decreasing in California in recent years of financial stringency or uncertainty, it is possible that there may have occurred also some decrease in the actual birth rate in this state such as is indicated by figures for several leading chartered cities as well as for these cities as a class. However, any real decrease in the California birth rate has been more than overcome by notable completeness of returns for births in the smaller cities and towns of the state which were first made separate birth registration districts under the new law in effect from August 8, 1915. The substantial completeness of birth registration in the smaller cities and towns in the last five months of 1915 accounts for the exceptionally great increase in the birth rate for 1915 over that for 1914 shown for the state outside chartered cities.

The birth rates equalled or exceeded the city averages of 16.9 and 17.9 for 1915 and 1914, respectively, in the following cities: Watsonville, 44.2 and 43.4; Richmond, 39.3 and 35.2; Modesto, 24.3 and 28.4; Fresno, 22.8 and 24.5; San Bernardino, 22.7 and 21.9; Santa Rosa, 21.1 and 22.5; San Diego, 19.9 and 22.5; Sacramento, 19.3 and 20.6; Santa Monica, 19.3 and 19.5; San Luis Obispo, 17.5 and 19.8; Long Beach, 17.1 and 19.4; Petaluma, 16.9 and 21.8; and Los Angeles, 16.9 and 18.7. The birth rate was also above the city average for 1915 alone (16.9) for Stockton, 21.1; Santa Barbara, 20.6; and Napa, 17.7.

The death rates surpassed the city average of 14.1 for both 1915 and 1914 in the following cities: Modesto, 28.5 in 1915 and 22.3 in 1914; Stockton, 27.6 and 21.9; San Bernardino, 22.0 and 22.6; San Diego, 19.6 and 19.3; Richmond, 19.2 and 17.6; Santa Monica, 18.0 and 19.1; San Luis Obispo, 18.9 and 16.6; Santa Barbara, 16.2 and 18.8; Santa Rosa, 18.6 and 15.5; Long Beach, 16.6 and 17.3; Eureka, 16.0 and 16.2; San Francisco, 15.9 and 15.5; Sacramento, 15.4 and 17.0; Watsonville, 15.4 and 16.7; and Grass Valley, 14.8 and 16.2. The death rate also exceeded the city average in 1915 alone for Bakersfield (17.6) and Napa (17.3) and in 1914 only for Salinas (14.8) and Fresno (14.4).

On the other hand, the death rates were remarkably low in both 1915 and 1914 for certain cities as follows: Palo Alto, 5.0 and 4.9; Berkeley, 9.0 and 8.3; Monterey, 11.1 and 9.9; Alameda, 11.1 and 11.0; Pasadena, 11.4 and 11.2; Oakland, 11.4 and 11.6; Riverside, 11.4 and 12.0; Vallejo, 9.3 and 12.4; San Jose, 12.2 and 12.4; Los Angeles, 12.6 and 12.9; Petaluma, 13.0 and 11.9; San Rafael 13.1 and 11.7; and Pomona, 13.3 and 11.8. The death rates were also notably low in 1915 alone for Fresno, 12.2, and for Alhambra, 12.3.

TABLE 11.—Deaths Reported for Registration Districts (Cities, Towns, and Rural Parts of Counties): 1915 and 1914.

(Cities or incorporated towns not reporting deaths omitted from table.)

Registration district	Deaths		Registration district	Deaths	
	1915	1914		1915	1914
California	39,026	37,537	Inyo County	43	42
Alameda County	3,677	3,559	Rural	32	23
Rural	506	483	Bishop	11	14
Alameda	299	290	Kern County	465	468
Albany	8	9	Rural	146	152
Berkeley	493	435	Bakersfield	236	239
Emeryville	30	22	Delano	2	
Hayward	34	60	Maricopa	3	3
Livermore	32	43	Taft	22	20
Oakland	2,199	2,115	Tehachapi	6	4
Piedmont	19	18	Kings County	221	191
Pleasanton	17	8	Rural	128	108
San Leandro	70	76	Corcoran	1	
Alpine County	2	2	Hanford	76	75
Amador County	120	136	Lemoore	16	8
Rural	60	61	Lake County	81	57
Amador	4		Rural	65	44
Jackson	44	51	Lakeport	16	13
Sutter Creek	12	24	Lassen County	60	67
Butte County	368	340	Los Angeles County	9,590	9,038
Rural	218	185	Rural	1,372	1,158
Biggs	6	4	Alhambra	87	73
Chico	33	34	Arcadia	6	1
Gridley	12	22	Avalon	4	
Oroville	49	45	Azusa	33	36
Calaveras County	98	92	Beverly Hills	10	
Rural	88	77	Burbank	22	15
Angels	10	15	Claremont	13	15
Colusa County	108	85	Compton	16	22
Rural	82	66	Covina	29	31
Colusa	26	19	El Monte	13	20
Contra Costa County	389	385	Glendale	106	95
Rural	117	97	Glendora	20	22
Antioch	21	34	Hermosa Beach	16	15
Concord		13	Huntington Park	35	32
Hercules	2		Inglewood	16	28
Martinez	57	61	Long Beach	431	422
Pinole	1		Lordsburg	15	8
Pittsburg	29	38	Los Angeles	5,363	5,644
Richmond	160	142	Manhattan Beach	7	5
Walnut Creek	2		Monrovia	139	161
Del Norte County	14	18	Pasadena	496	458
El Dorado County	114	109	Pomona	169	144
Rural	61	54	Redondo Beach	41	33
Placerville	53	55	San Fernando	23	11
Fresno County	1,071	1,091	San Gabriel	33	35
Rural	604	598	San Marino	3	
Clovis	1		Santa Monica	187	189
Coalinga	14	16	Sawtelle	51	43
Fowler	5		Sierra Madre	75	59
Fresno	377	430	South Pasadena	69	65
Kingsburg	11	9	Tropic	26	20
Reedley	21		Venice	61	52
Sanger	16		Vernon	7	6
Selma	22	38	Watts	41	27
Glenn County	70	71	Whittier	60	88
Rural	57	46	Madera County	88	85
Orland	4	5	Rural	80	85
Willows	9	20	Madera	8	
Humboldt County	370	414	Marin County	279	289
Rural	122	184	Rural	129	137
Arcata	10		Larkspur	5	1
Blue Lake	3	7	Mill Valley	22	26
Eureka	223	223	Ross	1	5
Ferndale	5		San Anselmo	11	11
Fortuna	2		San Rafael	92	80
Imperial County	270	319	Sausalito	19	29
Rural	75	188	Mariposa County	32	33
Brawley	26	26	Mendocino County	309	330
Calxico	42	38	Rural	198	220
El Centro	90	29	Fort Bragg	59	46
Holtville	18	11	Point Arena	10	5
Imperial	19	27	Potter Valley	3	5
			Ukiah	32	38
			Willits	12	16

TABLE 11.—Deaths Reported for Registration Districts (Cities, Towns, and Rural Parts of Counties): 1915 and 1914.—Continued.

(Cities or incorporated towns not reporting deaths omitted from table.)

Registration district	Deaths		Registration district	Deaths	
	1915	1914		1915	1914
Merced County	217	182	San Diego County—Continued.		
Rural	150	133	Oceanside	23	19
Los Banos	18	15	San Diego	1,008	946
Merced	49	34	San Francisco (city and county)	7,259	6,940
Modoc County	39	68	San Joaquin County	1,148	1,066
Rural	29	54	Rural	365	461
Alturas	10	14	Lodi	50	33
Mono County	6	5	Stockton	725	564
Monterey County	296	280	Tracy	8	8
Rural	130	112	San Luis Obispo County	232	220
King City	3	1	Rural	69	58
Monterey	73	62	Arroyo Grande	14	11
Pacific Grove	47	47	Paso de Robles	30	50
Salinas	55	58	San Luis Obispo	119	101
Napa County	551	497	San Mateo County	361	343
Rural	420	380	Rural	171	185
Calistoga	9	19	Burlingame	17	18
Napa	116	84	Daly City	16	14
St. Helena	6	5	Hillsborough	7	1
Nevada County	219	223	Redwood City	35	30
Rural	111	115	San Bruno	8	
Grass Valley	67	73	San Mateo	66	72
Nevada City	41	85	South San Francisco	41	23
Orange County	620	602	Santa Barbara County	384	396
Rural	264	222	Rural	100	96
Anaheim	66	78	Lompoc	13	16
Fullerton	28	39	Santa Barbara	232	260
Huntington Beach	33	26	Santa Maria	89	23
Newport Beach	2	12	Santa Clara County	1,562	1,477
Orange	50	48	Rural	900	792
Santa Ana	177	177	Gilroy	50	65
Placer County	251	221	Los Gatos	40	46
Rural	116	99	Mayfield	6	11
Auburn	55	61	Morgan Hill	2	
Colfax	16	18	Mountain View	15	21
Lincoln	10	17	Palo Alto	30	28
Rocklin	18	13	San Jose	463	461
Roseville	36	13	Santa Clara	55	53
Plumas County	70	44	Sunnyvale	1	
Riverside County	468	440	Santa Cruz County	410	379
Rural	91	103	Rural	142	108
Banning	56	37	Boulder Creek	2	9
Beaumont	19	18	Santa Cruz	190	181
Corona	54	44	Watsonville	76	81
Elsinore	18	9	Shasta County	231	218
Riverside	217	219	Rural	181	139
San Jacinto	13	10	Redding	50	79
Sacramento County	1,165	1,225	Sierra County	37	42
Rural	163	159	Rural	30	33
Sacramento	997	1,066	Loyalton	7	9
San Benito County	108	116	Siskiyou County	180	213
Rural	68	64	Rural	93	126
Hollister	88	50	Dorris	2	2
San Juan	2	2	Dunsmuir	20	16
San Bernardino County	1,148	1,139	Etna	10	3
Rural	460	432	Slason	3	8
Chino	15		Yreka	52	58
Colton	80	108	Solano County	324	342
Needles	32	23	Rural	104	96
Ontario	63	77	Benicia	32	9
Redlands	117	118	Dixon	15	19
Rialto	1		Fairfield	12	11
San Bernardino	358	352	Rio Vista	16	21
Upland	22	29	Suisun	5	9
San Diego County	1,356	1,300	Vacaville	18	18
Rural	132	159	Vallejo	122	159
Chula Vista	22	16	Sonoma County	720	655
Coronado	25	20	Rural	370	339
East San Diego	36	34	Cloverdale	19	19
El Cajon	3	4	Healdsburg	50	49
Esccondido	28	27	Petaluma	90	80
La Mesa	32	18	Santa Rosa	157	129
National City	52	57	Sebastopol	13	25
			Sonoma	21	14

TABLE II.—Deaths Reported for Registration Districts (Cities, Towns, and Rural Parts of Counties): 1915 and 1914.—Concluded.

(Cities or incorporated towns not reporting deaths omitted from table.)

Registration district	Deaths		Registration district	Deaths	
	1915	1914		1915	1914
Stanislaus County	859	316	Tulare County—Continued.		
Rural	143	142	Porterville	43	34
Modesto	145	109	Tulare	34	34
Newman	10	17	Visalia	87	69
Oakdale	31	24	Tuolumne County	90	104
Turlock	30	24	Ventura County	286	258
Sutter County	72	70	Rural	85	88
Rural	56	52	Fillmore	8	4
Yuba City	14	18	Oxnard	55	53
Tehama County	145	147	San Buenaventura	73	65
Rural	93	97	Santa Paula	66	48
Corning	6	9	Yolo County	211	193
Red Bluff	38	32	Rural	141	154
Tehama	8	8	Winters	22	6
Trinity County	43	43	Woodland	48	33
Tulare County	445	419	Yuba County	163	134
Rural	220	219	Rural	43	24
Oruba	31	25	Marysville	115	100
Exeter	14	15	Wheatland	5	1
Lindsay	16	23			

II. STATISTICS OF BIRTHS: 1915 AND 1914.

SYNOPSIS.

Births by Sex, Race and Maternal Nativity. The 48,075 babies in 1915 included 24,772 boys and 23,303 girls, while of the 46,012 in 1914 the males were 23,792 and the females 22,220. The per cent male was 51.5 in 1915 and 51.7 in 1914, as compared with the average of 51.7 for 1906 to 1915, the per cent having varied irregularly through the past ten years.

The per cents male were somewhat less in 1915 and 1914 for chartered cities as a class, 51.1 and 51.5, than for all the rest of the state, 52.2 and 52.0.

The race distribution of births in 1915 was: White, 43,874; Japanese, 3,342; Chinese, 429; Negro, 392; and Indian, 38. The figures for 1914 were: White, 42,281; Japanese, 2,874; Chinese, 418; Negro, 388; and Indian, 51. The per cent white decreased steadily through the past ten years, thus: 98.4 (1906), 97.7, 96.8, 96.3, 96.1, 95.5, 94.6, 93.2, 91.9 and 91.3 (1915).

The decrease in the proportion of white babies is due to marked increases in Japanese birth registrations as follows: 134 (1906), 221, 455, 682, 719, 995, 1,467, 2,215, 2,874 and 3,342 (1915).

In both 1915 and 1914 the per cents white were much greater within cities, 92.4 and 93.2, than outside them, 89.5 and 89.7.

The preponderance of males is greater, both within cities and outside them among the few non-Caucasian babies than among the many white infants.

The nativity of the white mothers in 1915 and 1914 was: Born in other states, 16,914 and 16,628; born in California, 13,941 and 13,097; and foreign born, 13,019 and 12,556.

The per cent distribution of white mothers was for 1915 and 1914, respectively: Other states, 38.5 and 39.3; California, 31.8 and 31.0; and foreign born, 29.7 each year. For 1906 to 1915 the annual average per cents were as follows: Other American, 38.1; Californian, 33.6; and foreign, 28.3.

Between 1906 and 1915 there were increases in the per cents for mothers here who were born in other states or abroad in contrast with a decrease in the per cent of native Californians among women bearing children.

For cities the per cent of mothers born in other states was 37.2 in 1915 and 38.2 in 1914; the per cent foreign born was 32.1 each year; and the per cents born in California were 30.7 and 29.7. For the rural districts the per cents in 1915 and 1914 were, respectively: Other states, 40.6 and 41.2; California, 33.5 and 33.1; and foreign, only 25.9 and 25.7.

Statistical tables have been prepared to show the proportion of the sexes among children born to white mothers classified by nativity. However, differences between geographic divisions and between urban and rural districts prevent the drawing of general conclusions about the effect of maternal nativity on the preponderance of male births.

Nativity of Brides and Mothers. Comparison of the per cent distribution of white brides and mothers, by nativity, shows that throughout California a larger portion of the brides than of the mothers were born in this state. Similarly, but in less degree, a larger proportion of the brides than the mothers were natives of other states. On the other hand, a much larger proportion of the mothers than of the brides in California were foreign born.

There is likewise an excess in the per cent born in California among single brides over that among mothers, though there is relatively little difference in the per cents born elsewhere in the United States for single brides and mothers. However, there is a great excess in the per cent born abroad among mothers over that for single brides.

It seems, therefore, that in California, as elsewhere in the United States, the fecundity of foreign born women is greater than that of native women, whether born in California or other states.

Children in Order of Birth. Special tabulations for 1915 show that 36.1 per cent of all babies in California were the first born to the mother, altogether 47.0 per cent were second, third or fourth born, and only 14.0 per cent were for mothers bearing five children or more, the order of birth being unknown for the remaining 2.9 per cent.

The per cent of first born children was 39.5 within chartered cities but only 31.2 outside them; for second, third and fourth born was altogether 46.0 for cities against 48.6 for country districts; and for babies who were the fifth or over was only 11.5 in cities as compared with 17.6 in rural territory.

The per cents for first born babies were highest among twenty leading cities for Stockton, Fresno, San Diego, Santa Barbara, Santa Monica, San Francisco, Eureka, Los Angeles and Alameda.

The proportions for second, third and fourth born children were highest in Watsonville, Richmond, Pasadena, Alameda, Oakland, Berkeley, Riverside, Long Beach, Sacramento and San Bernardino.

The proportions for mothers bearing five babies or more were highest for San Jose, Riverside, San Bernardino, Fresno, Santa Monica, Richmond, San Francisco, Santa Barbara, Eureka and Berkeley.

BIRTHS BY SEX, RACE AND MATERNAL NATIVITY.

Sex.—The following table gives the classification of births by sex, with per cents, for the several geographic divisions in both 1915 and 1914. There are also appended to the table corresponding figures for the freeholders charter cities (numbering thirty-four in 1915 and thirty-two in 1914) in contrast with all the rest of the state.

TABLE 1.—Births Classified by Sex, with Per Cents, for Geographic Divisions,* and for Cities and Rest of State: 1915 and 1914.

Geographic division or population group	Births						Per cent male		Per cent female	
	Total		Male		Female		1915	1914	1915	1914
	1915	1914	1915	1914	1915	1914				
The State	48,075	46,012	24,772	23,702	23,303	22,220	51.5	51.7	48.5	48.3
Northern California	4,562	4,203	2,374	2,213	2,188	1,990	52.0	52.7	48.0	47.3
Coast counties	1,923	1,800	1,010	958	913	851	52.5	53.0	47.5	47.0
Interior counties	2,639	2,394	1,364	1,255	1,275	1,139	51.7	52.4	48.3	47.6
Central California	25,499	24,335	13,186	12,504	12,313	11,831	51.7	51.4	48.3	48.6
San Francisco	7,624	7,646	3,944	3,956	3,680	3,690	51.7	51.7	48.3	48.3
Other bay counties	6,075	5,842	3,119	2,980	2,956	2,902	51.3	51.0	48.7	49.0
Coast counties	3,084	2,671	1,562	1,355	1,472	1,516	51.5	50.7	48.5	49.3
Interior counties	8,766	8,176	4,561	4,213	4,205	3,963	52.0	51.5	48.0	48.5
Southern California	18,014	17,474	9,212	9,075	8,802	8,399	51.1	51.9	48.9	48.1
Los Angeles	12,106	12,378	6,160	6,418	5,946	5,960	50.9	51.9	49.1	48.1
Other counties	5,908	5,096	3,052	2,657	2,856	2,439	51.7	52.1	48.3	47.9
Northern and Central California	30,061	28,538	15,560	14,717	14,501	13,821	51.8	51.6	48.2	48.4
Coast counties	18,656	17,968	9,635	9,219	9,021	8,719	51.6	51.5	48.4	48.5
Interior counties	11,405	10,570	5,925	5,468	5,480	5,102	52.0	51.7	48.0	48.3
Metropolitan area	13,099	13,488	7,063	6,936	6,636	6,552	51.6	51.4	48.4	48.6
Rural counties	16,362	15,060	8,497	7,781	7,865	7,269	51.9	51.7	48.1	48.3
Freeholders' charter cities	28,580	28,594	14,592	14,740	13,977	13,854	51.1	51.5	48.9	48.5
Rest of State	19,506	17,418	10,180	9,952	9,321	8,366	52.2	52.0	47.8	48.0

*For counties included in geographic divisions, see page 186.

The proportion of the sexes among the 48,075 children born in California in 1915 was: Male, 24,772 or 51.5 per cent; and female, 23,303 or 48.5 per cent. Among the 46,012 born in 1912, the proportion of the sexes was: Male, 23,792 or 51.7 per cent; and female, 22,220 or 48.3 per cent. It may be added that for 1906 to 1915 the annual average per cent male was 51.7, and the per cent female was 48.3. The per cent male ranged irregularly through the ten years thus: 52.1 (1906), 51.2, 51.7, 52.3, 52.1, 51.6, 51.4, 51.8, 51.7, and 51.5 (1915).

In 1915 the male births exceeded the female by 1,469 or 6.3 per cent, while in 1914 the excess of boys over girls was 1,572 or 7.1 per cent. The male births exceeded the female in every main and minor geographic division in both 1915 and 1914. The per cent male was highest in both 1915 and 1914 for the coast counties of northern California, 52.5 and 53.0, respectively. The per cent was lowest in 1915 for Los Angeles, 50.9, and in 1914 for the coast counties of central California, 50.7.

The per cents male were somewhat lower for the metropolitan area each year than for the rural counties north of Tehachapi, but were slightly higher for San Francisco alone than for the adjoining bay counties. The per cents male were lower for Los Angeles each year than for the other counties south of Tehachapi.

The figures for cities appended to Table 1 show that among the 28,569 births in freeholders' charter cities in 1915 the proportion of the sexes was: Male, 14,592 or 51.1 per cent; and female, 13,977 or 48.9 per cent. The proportion of the sexes among the 28,594 births in chartered cities in 1914 was: Male, 14,740 or 51.5 per cent; and female, 13,854 or 48.5 per cent.

In California outside chartered cities there were 19,506 births in 1915, classified by sex as follows: Male, 10,180 or 52.2 per cent; and female, 9,326 or 47.8 per cent. For the state outside cities the 17,418 births in 1914 were distributed by sex thus: Male, 9,052 or 52.0 per cent; and female, 8,366 or 48.0 per cent.

The per cents male were somewhat less each year for chartered cities as a class than for all the rest of the state.

Race.—The following table gives the classification of births by race, as well as the per cent white, for the several geographic divisions in 1915 and 1914. There are also included in the table corresponding figures for freeholders' charter cities in contrast with all the rest of the state each year.

TABLE 2.—Births Classified by Race, with Per Cent White, for Geographic Divisions, and for Cities and Rest of State: 1915 and 1914.

Geographic division or population group	Births						Per cent white
	Total	White	Negro	Indian	Chinese	Japanese	
1915.							
The State -----	48,075	43,874	392	38	420	3,342	91.3
Northern California -----	4,562	4,323	9	19	18	188	94.9
Coast counties -----	1,923	1,871	7	7	1	44	97.3
Interior counties -----	2,639	2,457	9	12	17	144	93.1
Central California -----	25,499	23,092	108	7	369	1,923	90.6
San Francisco -----	7,634	7,147	18	-----	196	263	93.7
Other bay counties -----	6,075	5,635	50	1	73	316	92.8
Coast counties -----	3,084	2,591	5	-----	22	416	85.4
Interior counties -----	8,766	7,719	35	6	78	928	88.1
Southern California -----	18,014	16,454	275	12	42	1,231	91.3
Los Angeles -----	12,106	10,912	225	4	30	935	90.1
Other counties -----	5,908	5,542	50	8	12	296	93.8
Northern and Central Cal- ifornia -----	30,061	27,420	117	26	387	2,111	91.2
Coast counties -----	18,656	17,244	73	8	292	1,089	92.4
Interior counties -----	11,405	10,176	44	18	95	1,072	89.2
Metropolitan area -----	13,699	12,782	68	1	269	579	93.3
Rural counties -----	16,362	14,638	49	25	118	1,532	89.5
Freeholders' charter cities.....	23,569	26,408	320	11	345	1,485	92.4
Rest of State.....	19,506	17,466	72	27	84	1,857	89.5
1914.							
The State -----	46,012	42,281	388	51	418	2,874	91.9
Northern California -----	4,203	4,001	4	34	17	147	95.2
Coast counties -----	1,809	1,744	1	22	6	36	96.4
Interior counties -----	2,394	2,257	3	12	11	111	94.3
Central California -----	24,335	22,087	107	7	362	1,772	90.8
San Francisco -----	7,646	7,189	20	1	196	240	94.0
Other bay counties -----	5,842	5,418	50	1	66	307	92.7
Coast counties -----	2,671	2,377	2	-----	19	373	85.2
Interior counties -----	8,176	7,203	35	5	81	852	88.1
Southern California -----	17,474	16,193	277	10	39	955	92.7
Los Angeles -----	12,378	11,398	231	4	28	717	92.1
Other counties -----	5,096	4,795	46	6	11	238	94.1
Northern and Central Cal- ifornia -----	28,538	26,088	111	41	379	1,919	91.4
Coast counties -----	17,968	16,628	73	24	287	956	92.5
Interior counties -----	10,570	9,460	38	17	92	963	89.5
Metropolitan area -----	13,488	12,607	70	2	262	547	93.5
Rural counties -----	15,050	13,481	41	39	117	1,372	89.6
Freeholders' charter cities.....	23,594	26,654	328	12	338	1,262	93.2
Rest of State.....	17,418	15,627	60	39	80	1,612	89.7

It appears from this table that the race distribution of the 48,075 births in California in 1915 was: White, 43,874 or 91.3 per cent; Japanese, 3,342; Chinese, 429; negro, 392; and Indian, 38. In 1914 the race distribution of the 46,012 births was: White, 42,281 or 91.9 per cent; Japanese, 2,874; Chinese, 418; negro, 388; and Indian, 51. Each year the Japanese were decidedly the leading non-Caucasian race represented in births, with the Chinese and negroes next in order but far behind, and with Indians barely shown at all. It may be added that for 1906 to 1915 the annual average per cent white was 95.2. Moreover, the per cent white decreased steadily in the whole ten years covered by the present registration system, the successive per cents being as follows: 98.4 (1906), 97.7, 96.8, 96.3, 96.1, 95.5, 94.6, 93.2, 91.9 and 91.3 (1915).

The steady decrease in the proportion of Caucasian babies in California is due mainly to notable increases in the registration of births of Japanese children. The increasing registration of Japanese births has been particularly great in recent years when there has been public agitation as well as actual legislation in California with respect to the ownership of land by aliens. Thus the successive totals for births of Japanese in California have been as follows: 134 (1906), 221, 455, 682, 719, 995, 1,467, 2,215, 2,874, and 3,342 (1915).

In 1915 and 1914 the per cents white were highest for northern California, 94.9 and 95.2, next for southern California, 91.3 and 92.7, and lowest for central California, 90.6 and 90.8. Among the minor geographic divisions the per cents white ranged from 97.3 and 96.4 for the coast counties of northern California in 1915 and 1914, respectively, to merely 85.4 and 85.2 for the coast counties of central California.

The per cents white were greater each year for the metropolitan area than for the rural counties north of Tehachapi and also for the metropolis proper than for the group of suburban counties. However, the per cents white were less for Los Angeles both years than for the other counties of southern California.

The additional figures for cities in Table 2 show that among the 28,569 births in chartered cities in 1915, the race distribution was: White, 26,408 or 92.4 per cent; Japanese, 1,485; Chinese, 345; negro, 320; and Indian, 11. The race distribution of the 28,594 births in cities in 1914 was: White, 26,654 or 93.2 per cent; Japanese, 1,262; Chinese, 338; negro, 328; and Indian, 12.

For the state exclusive of chartered cities, there were 19,506 births in 1915, distributed by race as follows: White, 17,466 or 89.5 per cent; Japanese, 1,857; Chinese, 84; negro, 72; and Indian, 27. There were 17,418 births outside cities in 1914, distributed by race thus: White, 15,627 or 89.7 per cent; Japanese, 1,612; Chinese, 80; negro, 60; and Indian, 39.

In both 1915 and 1914 the per cents white were much greater for births within cities, 92.4 and 93.2, than for births outside them, 89.5 and 89.7. The general decrease in the per cent white, for 1915 as compared with 1914, was common to both chartered cities and rural districts.

Sex and Race.—In the table below births of whites and non-Caucasians are classified by sex, with per cents, for both 1915 and 1914. There were so few births of non-Caucasians in some geographic divisions that figures are presented here only for the thirty-four chartered cities in 1915 and the thirty-two in 1914, as contrasted with the rest of the state.

TABLE 3.—Births Classified by Sex and Race, with Per Cents by Sex, for Cities and Rest of State: 1915 and 1914.

Population group	Births						Per cent male		Per cent female	
	Total		Male		Female					
	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914
White.										
California	43,874	42,281	22,583	21,791	21,291	20,490	51.5	51.5	49.5	48.5
Freeholders' charter cities	26,408	26,654	13,483	13,724	12,925	12,930	51.1	51.5	48.9	48.5
Rest of State	17,466	15,627	9,100	8,067	8,366	7,560	52.1	51.6	47.9	48.4
Non-Caucasian.										
California	4,201	3,731	2,189	2,001	2,012	1,730	52.1	52.6	47.9	46.4
Freeholders' charter cities	2,161	1,940	1,109	1,016	1,052	924	51.3	52.4	48.7	47.6
Rest of State	2,040	1,791	1,080	985	960	806	52.9	55.0	47.1	45.0

This table shows, in brief, that the preponderance of males was much greater, both within cities and outside them, among the few non-Caucasian births than among the many white births. Thus, in 1915 and 1914, respectively, the per cents male were 52.1 and 53.6 for non-Caucasians against only 51.5 each year for whites in the state as a whole; 51.3 and 52.4 for non-Caucasians against 51.1 and 51.5 for whites in cities as a class; and 52.9 and 55.0 for non-Caucasians against only 52.1 and 51.6 for whites in all the rest of California.

Nativity of White Mothers.—The analysis of births by race may be extended to a consideration of births according to the nativity of white mothers—classified as born in California, born in other states, or foreign born—as given in the following table, by numbers and per cents, for the several geographic divisions in both 1915 and 1914. There are included in the table likewise corresponding figures for freeholders' charter cities as compared with all the rest of the state each year.

TABLE 4.—White Mothers Classified by Nativity, with Per Cents, for Geographic Divisions, and for Cities and Rest of State: 1915 and 1914.

Geographic division or population group	White mothers				Per cent		
	Total	Born in Cal- ifornia	Born in other states	Foreign born	Born in Cal- ifornia	Born in other states	Foreign born
1915.							
The State	43,874	13,941	16,914	13,019	31.8	38.5	29.7
Northern California	4,828	2,135	1,244	949	49.3	25.8	21.9
Coast counties	1,871	930	411	500	49.7	23.6	26.7
Interior counties	2,457	1,205	803	449	49.0	32.7	18.3
Central California	25,092	8,969	6,415	7,698	38.9	27.8	33.3
San Francisco	7,147	2,835	1,277	3,035	39.7	17.9	42.4
Other bay counties	5,635	2,249	1,503	1,883	39.9	26.7	33.4
Coast counties	2,591	1,192	606	794	46.0	23.4	30.6
Interior counties	7,719	2,713	3,030	1,976	35.1	39.3	25.6
Southern California	16,454	2,817	9,255	4,382	17.1	56.3	26.6
Los Angeles	10,912	1,608	6,242	3,062	14.7	57.2	28.1
Other counties	5,542	1,209	3,013	1,320	21.8	54.4	23.8
Northern and Central Cal- ifornia	27,430	11,124	7,650	8,637	40.6	27.9	31.5
Coast counties	17,244	7,306	3,826	6,212	41.8	22.2	36.0
Interior counties	10,176	3,918	3,833	2,425	38.5	37.7	23.8
Metropolitan area	12,782	5,084	2,780	4,918	39.8	21.7	38.5
Rural counties	14,688	6,040	4,879	3,719	41.3	33.3	25.4
Freeholders' charter cities	26,408	8,093	9,828	8,487	30.7	37.2	32.1
Rest of State	17,466	5,848	7,086	4,532	33.5	40.6	25.9
1914.							
The State	42,281	13,097	16,628	12,556	31.0	39.3	29.7
Northern California	4,001	1,953	1,181	867	48.8	29.5	21.7
Coast counties	1,744	810	420	484	46.2	24.1	27.7
Interior counties	2,257	1,113	761	883	49.3	33.7	17.0
Central California	23,087	8,466	6,259	7,362	36.3	28.4	33.3
San Francisco	7,189	2,722	1,328	3,139	37.8	18.5	48.7
Other bay counties	5,418	2,189	1,478	1,741	40.6	27.3	32.1
Coast counties	2,277	1,011	506	700	44.4	24.9	30.7
Interior counties	7,203	2,534	2,887	1,782	35.2	40.1	24.7
Southern California	16,193	2,678	9,188	4,327	16.5	56.8	26.7
Los Angeles	11,398	1,693	6,501	3,204	14.9	57.0	28.1
Other counties	4,795	985	2,687	1,123	20.6	56.0	23.4
Northern and Central Cal- ifornia	26,068	10,419	7,440	8,229	39.9	28.5	31.6
Coast counties	16,628	6,772	3,792	6,064	40.7	22.8	36.5
Interior counties	9,460	3,647	3,648	2,165	38.5	38.6	22.9
Metropolitan area	12,607	4,921	2,806	4,880	39.0	22.3	38.7
Rural counties	13,481	5,498	4,634	3,349	40.8	34.4	24.8
Freeholders' charter cities	26,654	7,924	10,185	8,545	29.7	38.2	32.1
Rest of State	15,627	5,173	6,443	4,011	33.1	41.2	25.7

It appears from this table that of the mothers of the white children born in this state totaling 43,874 and 42,281 in 1915 and 1914, respectively, those who were themselves born in other states numbered 16,914 and 16,628; those who were Californians like their children were 13,941 and 13,097; and the foreign born white mothers were 13,019 and 12,556. The per cent distribution of white mothers was as follows for 1915 and

1914, respectively: Other states, 38.5 and 39.3; California, 31.8 and 31.0; and foreign born, 29.7 each year. For 1906 to 1915 the annual average per cents were as follows: Other American, 38.1; Californian, 33.6; and foreign, 28.3.

It may be noted that the per cent of mothers in California who were natives of other states increased in general between 1906 and 1915 as follows: 37.8 (1906), 38.2, 37.2, 36.0, 37.3, 37.4, 39.3, 39.9, 39.3 and 38.5 (1915). The per cent foreign born among white mothers in California also increased generally through the ten years, thus: 25.9 (1906), 26.7, 28.0, 28.5, 28.4, 29.0, 28.8, 28.6, and 29.7 (both 1914 and 1915). However, the per cent of native Californians among women bearing children here decreased considerably during the decade as follows: 36.3 (1906), 35.1, 34.8, 35.5, 34.3, 33.6, 31.9, 31.5, 31.0 and 31.8 (1915).

The proportion of white mothers born in other states is very high for southern California, but is quite low for both northern and central California. The per cents born in other states were somewhat higher in 1915 and 1914 for Los Angeles than for the other counties south of Tehachapi. However, the per cents each year were considerably less for the metropolitan area than for the rural counties north of Tehachapi, and were very much less for San Francisco than for the suburban counties.

The proportion of mothers who were themselves native daughters is very high for northern California as well as for central California in less degree, but is very low, indeed, for southern California. The per cents born in California were much less in 1915 and 1914 for Los Angeles than for the other counties south of Tehachapi. The per cents were likewise somewhat less for the metropolitan area than for the rural counties north of Tehachapi and for San Francisco alone than for the adjoining bay counties.

The proportion of foreign born mothers of the white race is notably high only for central California, the per cents in both 1915 and 1914 being highest by far for San Francisco and above the state averages besides only for the group of other bay counties and the adjacent group of coast counties of central California.

From the additional data for cities in Table 4 it appears that of the 26,408 mothers of white children born in freeholders' charter cities in 1915 altogether 9,828 or 37.2 per cent were natives of other states; 8,487 or 32.1 per cent were foreign born; and 8,093 or 30.7 per cent were natives of California. Of the 26,654 white mothers bearing children in chartered cities in 1914, those born in other states were 10,185 or 38.2 per cent; those born abroad were 8,545 or 32.1 per cent; and those born in California were 7,924 or 29.7 per cent.

For the state outside cities there were 17,466 births of white children in 1915, with mothers born as follows: Other states, 7,086 or 40.6 per cent; California, 5,848 or 33.5 per cent; and foreign countries, 4,532 or 25.9 per cent. In 1914 there were 15,627 white children born in the rural part of the state, with maternal nativity as follows: Other states, 6,443 or 41.2 per cent; California, 5,173 or 33.1 per cent; and foreign, 4,011 or 25.7 per cent.

The per cents American born, whether in California or other states, were less each year for chartered cities than for rural districts, while the per cent foreign born was much greater within cities than outside them. The excess in the per cent of mothers born in this state for rural districts over that for cities was 2.8 in 1915 (33.5 against 30.7), and 3.4 in 1914 (33.1 against 29.7). Similarly, the excess in the per cent born elsewhere in the United States for the rural over the urban districts was 3.4 in 1915 (40.6 against 37.2), and 3.0 in 1914 (41.2 against 38.2). On the other hand, the excess in the per cent foreign born among white mothers in cities over that among mothers in the country districts was no less than 6.2 in 1915 (32.1 against 25.9), and 6.4 in 1914 (32.1 against 25.7).

Both within cities and outside them the women bearing most children in California are those who were themselves born in other states. Foreign born mothers are second for births in chartered cities, but a poor third for births outside cities. California born mothers are a good second for births in the rural districts, and even a close third for births in urban territory.

Sex and Nativity of White Mothers.—In the study of sex and race, *ante*, it was found that the preponderance of male births was much greater among non-Caucasians than among whites. The following table has been prepared to show the proportion of the sexes among children born to white mothers classified by nativity. Only the per cent distribution, by sex, is given here, but the absolute figures are presented, *post*, in Table 14, for geographic divisions, and Table 15, for cities and rest of state.

TABLE 5.—Per Cent Distribution, by Sex, of White Children, with Mothers Classified by Nativity, for Geographic Divisions, and for Cities and Rest of State: 1915 and 1914.

Geographic division or population group	White children											
	Per cent male among those with mothers						Per cent female among those with mothers					
	Born in California		Born in other states		Foreign born		Born in California		Born in other states		Foreign born	
	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914
The State	51.2	51.2	51.5	51.1	51.6	52.4	48.8	48.8	48.5	48.9	48.4	47.6
Northern California	53.1	53.1	52.3	50.2	49.1	54.4	46.9	46.9	47.7	49.8	50.9	45.6
Coast counties	54.3	53.0	53.3	47.6	47.8	55.8	45.7	47.0	46.7	52.4	52.3	44.2
Interior counties	52.1	53.2	51.8	51.6	50.6	52.7	47.9	46.8	48.2	48.4	49.4	47.3
Central California	51.0	50.5	51.3	51.0	52.8	52.1	49.0	49.5	48.7	49.0	47.2	47.9
San Francisco	51.2	51.1	50.7	52.3	52.3	52.1	48.8	48.9	49.3	47.7	47.7	47.9
Other bay counties	51.6	50.9	50.7	49.9	51.2	52.0	48.4	49.1	49.3	50.1	48.8	48.0
Coast counties	50.8	50.1	51.2	50.7	53.5	50.4	49.2	49.9	48.8	49.3	46.5	49.6
Interior counties	50.4	49.6	51.9	51.1	54.6	52.7	49.6	50.4	48.1	48.9	45.4	47.3
Southern California	50.6	52.2	51.5	51.3	50.2	52.5	49.4	47.8	48.5	48.7	49.8	47.5
Los Angeles	48.3	52.3	51.2	51.5	50.8	51.8	51.7	47.7	48.8	48.5	49.2	48.2
Other counties	53.7	52.2	52.1	50.9	48.9	54.5	46.3	47.8	47.9	49.1	51.1	45.5
Northern and Central California	51.4	51.0	51.5	50.9	52.4	52.3	48.6	49.0	48.5	49.1	47.6	47.7
Coast counties	51.7	51.1	51.1	50.6	51.8	52.2	48.3	48.9	48.9	49.4	48.2	47.8
Interior counties	50.9	50.7	51.9	51.2	53.9	52.7	49.1	49.3	48.1	48.8	46.1	47.3
Metropolitan area	51.4	51.0	50.7	51.1	51.9	52.1	48.6	49.0	49.3	48.9	48.1	47.9
Rural counties	51.4	50.9	51.9	50.8	53.0	52.7	48.6	49.1	48.1	49.2	47.0	47.3
Freeholders' charter cities	50.7	51.2	51.1	51.2	51.2	52.1	49.3	48.8	48.9	48.8	48.8	47.9
Rest of state	51.9	51.3	52.0	51.1	52.4	52.9	48.1	48.7	48.0	48.9	47.6	47.1

The per cents of male births in California in 1915 and 1914, respectively, were 51.2 each year for native daughters, 51.5 and 51.1 for mothers born in other states, and 51.6 and 52.4 for foreign born mothers. For 1908 to 1915, the eight year period for which data are available on sex of births classified by maternal nativity, the annual average per cents were as follows: Californians, 51.4; other Americans, 51.7; and foreign born, also 51.7. The per cents for native Californians and other Americans were not far from the same in 1915 and 1914, while the per cents for foreign born mothers were slightly higher than for Californian or other American born mothers in the years mentioned. For earlier years, however, the contrasts were along different lines.

Differences like those just mentioned between the per cents for the state in various years occur also among the per cents for the several geographic divisions in 1915 and 1914, so that it is impossible to draw general conclusions from these figures about the effect of maternal nativity on the preponderance of male births.

From the data for cities appended to Table 5 it appears that in 1915 and 1914, respectively, the per cents of male births were 50.7 and 51.2 for Californian mothers and 51.1 and 51.2 for other Americans, as compared with 51.2 and 52.1 for mothers born abroad. For 1908

to 1915, the annual average per cents male were as follows, according to maternal nativity: California, 51.4; other states, 51.7; and foreign countries, 51.5. That is, in cities where the three elements of the population are about equally represented, the preponderance of male births is not so very far from the same for each of the three classes.

In rural districts, where the foreign born element is least numerous, the per cents male in 1915 and 1914 were 51.9 and 51.3 among children of native daughters and 52.0 and 51.1 among children of other Americans, as compared with 52.4 and 52.9 among children of foreign born mothers. For 1908 to 1915 the annual average per cents male for births to mothers classified by nativity were as follows: Californian, 51.5; other American, 51.7; and foreign, 52.3. The California and other American mothers outnumber by far the foreign born in rural districts, while the preponderance of male births is generally greater in country sections for mothers born abroad than for natives of California or other states.

NATIVITY OF BRIDES AND MOTHERS.

Nativity of White Brides and Mothers.—Some facts of interest are disclosed by a comparison of the nativity of white brides and mothers in California. Accordingly, the following table is presented, giving, for the several geographic divisions in 1915 and 1914, a comparison of the per cent distribution of white brides and white mothers by nativity:

TABLE 6.—Comparison of Per Cent Distribution, by Nativity, of White Brides and White Mothers, for Geographic Divisions: 1915 and 1914.

Geographic division	Per cent born in California			Per cent born in other states			Per cent foreign born		
	White brides	White mothers	Excess for brides over mothers	White brides	White mothers	Excess for brides over mothers	White brides	White mothers	Excess for mothers over brides
1915.									
The State	36.0	31.8	4.2	45.4	38.5	6.9	18.6	29.7	11.1
Northern California	57.7	49.3	8.4	29.3	28.8	0.5	13.0	21.9	8.9
Coast counties	58.5	49.7	8.8	24.8	23.6	1.2	16.7	26.7	10.0
Interior counties	56.9	49.0	7.9	33.9	33.7	1.2	9.2	18.3	9.1
Central California	44.8	38.9	5.9	34.1	27.8	6.3	21.1	33.3	12.2
San Francisco	41.5	39.7	1.8	30.9	17.9	13.0	27.6	42.4	14.8
Other bay counties	47.5	39.9	7.6	33.1	26.7	6.4	19.4	33.4	14.0
Coast counties	52.4	46.0	6.4	32.1	23.4	8.7	15.5	30.6	15.1
Interior counties	44.0	35.1	8.9	39.8	39.3	0.5	16.2	25.6	9.4
Southern California	18.7	17.1	1.6	65.1	56.3	8.8	16.2	26.6	10.4
Los Angeles	16.5	14.7	1.8	66.2	57.2	9.0	17.3	28.1	10.8
Other counties	22.0	21.8	0.2	63.6	54.4	9.2	14.4	23.8	9.4
Northern and Central California	46.5	40.6	5.9	33.5	27.9	5.6	20.0	31.5	11.5
Coast counties	46.4	41.8	4.6	31.2	22.2	9.0	22.4	36.0	13.6
Interior counties	46.7	38.5	8.2	38.5	37.7	0.8	14.8	23.8	9.0
Metropolitan area	43.9	39.3	4.1	31.3	21.7	10.1	24.3	38.5	14.2
Rural counties	49.5	41.3	8.2	35.3	33.3	2.0	15.2	25.4	10.2
1914.									
The State	36.4	31.0	5.4	43.3	39.3	4.0	20.3	29.7	9.4
Northern California	55.6	48.8	6.8	30.7	29.5	1.2	13.7	21.7	8.0
Coast counties	56.0	48.2	7.8	26.1	24.1	2.0	17.9	27.7	9.8
Interior counties	55.3	49.3	6.0	35.5	33.7	1.8	9.2	17.0	7.8
Central California	45.7	38.3	7.4	30.9	23.4	2.5	23.4	33.3	9.9
San Francisco	43.4	37.8	5.6	24.8	18.5	6.3	31.8	43.7	11.9
Other bay counties	48.2	40.6	7.6	30.9	27.3	3.6	20.9	32.1	11.2
Coast counties	52.2	44.4	7.8	28.5	24.9	3.6	19.3	30.7	11.4
Interior counties	43.7	35.2	8.5	38.4	40.1	-1.7	17.9	24.7	6.8
Southern California	19.0	16.5	2.5	63.5	56.8	6.7	17.5	26.7	9.2
Los Angeles	17.4	14.9	2.5	64.0	57.0	7.0	18.6	28.1	9.5
Other counties	21.6	20.6	1.0	62.6	56.0	6.6	15.8	23.4	7.6
Northern and Central California	47.1	39.9	7.2	30.9	28.5	2.4	22.0	31.6	9.6
Coast counties	47.6	40.7	6.9	27.5	22.8	4.7	24.9	36.5	11.6
Interior counties	46.1	38.5	7.6	37.8	38.6	-0.8	16.1	22.9	6.8
Metropolitan area	45.5	39.0	6.5	27.5	22.3	5.2	27.0	38.7	11.7
Rural counties	48.7	40.8	7.9	34.3	34.4	-0.1	17.0	24.8	7.8

This table shows that the per cents born in California were considerably greater in 1915 and 1914 among brides than among mothers, and the per cents born in other states were likewise greater, though in different degree, among brides than among mothers. On the other hand, the per cents foreign born were much greater each year for white mothers than for white brides.

Comparison of the annual average per cents for the state as a whole in 1906 to 1915 also indicates that among native daughters the excess in the per cent for brides over that for mothers was 5.2 (38.8 against 33.6); among other Americans the excess in the per cent for brides over that for mothers was 3.6 (41.7 against 38.1); and among the foreign born the converse excess in the per cent for mothers over that for brides was as great as 8.8 (28.3 against 19.5).

Reference to the preceding table shows that the excess in the per cent born in California among brides over that among mothers was 4.2 in 1915 (36.0 against 31.8) and 5.4 in 1914 (36.4 against 31.0). In every main and minor geographic division in both 1915 and 1914 a larger per cent of white brides than of white mothers were natives of this state.

The excess in the per cent born in California for brides over that for mothers was much greater for the counties north of Tehachapi than for those to the south. However, the proportion of native daughters among both brides and mothers is much greater anyway in northern and central California than in southern California. The excess in the per cents for brides over those for mothers was somewhat less for the metropolitan area than for the rural counties north of Tehachapi. The excess was likewise less for the metropolis proper than for the suburban counties.

Reference to the table indicates that the excess in the per cent born in other states for brides over that for mothers was 6.9 in 1915 (45.4 against 38.5) and 4.0 in 1914 (43.3 against 39.3). Except only for the interior counties of central California in 1914 alone, the several main and minor geographic divisions showed in both 1915 and 1914 that a larger per cent of the white brides than of the white mothers in California were born in other states.

The excess in the per cent born in other states for brides over that for mothers was considerably greater for the counties south of Tehachapi than for those to the north. It must be remembered, however, that the proportion of both brides and mothers born in other states is particularly great for southern California, but relatively small for northern as well as central California. In the metropolitan area a much larger proportion of the brides than of the mothers were born elsewhere in the United States; in the rural counties north of Tehachapi, however, the excess in the per cent for brides was very small for 1915, while for 1914 there was even a slight excess in the per cent for mothers. The excess in the per cent born in other states among brides over that among mothers was considerably greater for San Francisco than for the other bay counties.

Further reference to the table shows that the per cent born abroad among mothers exceeded that among brides by 11.1 in 1915 (29.7

against 18.6) and by 9.4 in 1914 (29.7 against 20.3). In every geographic division each year a much larger per cent of the white mothers than of the white brides were foreign born.

The marked excess in the per cent foreign born among mothers over that among brides was greatest in central California; next in southern California; and least in northern California. It is in these geographic divisions that the proportions foreign born among both mothers and brides are likewise greatest in the same order as here stated for the excess of foreign mothers over foreign brides. In the metropolitan area, where the foreign born element mainly abounds, the excess in the per cent of foreign born mothers over that of foreign born brides was much greater than for the rural counties north of Tehachapi. However, while San Francisco has a much larger proportion of foreign born inhabitants than the other bay counties, yet the excess in the per cent of foreign born mothers over that of foreign brides was barely greater for the metropolis proper than for the suburban counties.

Nativity of Single White Brides and White Mothers.—Since the marriages in which the brides were single are more apt to be blessed with children than those in which the brides were widowed or divorced, it may be even more instructive to compare the nativity of white mothers, not merely with that of all white brides, but rather with the nativity of the single white brides alone. The following table has, therefore, been prepared to show, for the several geographic divisions in 1915 and 1914, a comparison of the per cent distribution, by nativity, of single white brides and white mothers:

TABLE 7.—Comparison of Per Cent Distribution, by Nativity, of Single White Brides and White Mothers, for Geographic Divisions: 1915 and 1914.

Geographic division	Per cent born in California			Per cent born in other states			Per cent foreign born		
	Single white brides	White mothers	Excess for single brides over mothers	Single white brides	White mothers	Excess for single brides over mothers	Single white brides	White mothers	Excess for mothers over single brides
1915.									
The State	39.0	31.8	7.2	42.6	38.5	4.1	18.4	29.7	11.3
Northern California	62.0	49.8	12.2	26.1	28.2	-2.7	11.9	21.9	10.0
Coast counties	63.5	49.7	13.8	20.9	23.6	-2.7	15.6	26.7	11.1
Interior counties	60.5	49.0	11.5	31.3	32.7	-1.4	8.2	18.3	10.1
Central California	48.1	38.9	9.2	30.7	27.5	2.9	21.2	33.3	12.1
San Francisco	44.4	39.7	4.7	26.5	17.9	8.6	29.1	42.4	13.3
Other bay counties	51.3	39.9	11.4	29.6	26.7	2.9	19.1	33.4	14.3
Coast counties	56.9	46.0	10.9	28.0	23.4	4.6	15.1	30.6	15.5
Interior counties	46.7	35.1	11.6	37.8	39.3	-1.5	15.5	25.6	10.1
Southern California	20.7	17.1	3.6	63.4	56.3	7.1	15.9	26.6	10.7
Los Angeles	18.2	14.7	3.5	65.2	57.2	8.0	16.6	28.1	11.5
Other counties	24.7	21.8	2.9	60.6	54.4	6.2	14.7	23.8	9.1
Northern and Central California	49.9	40.6	9.3	30.1	27.9	2.2	20.0	31.5	11.5
Coast counties	50.1	41.8	8.3	27.1	22.2	4.9	22.8	36.0	13.2
Interior counties	49.6	38.5	11.1	30.4	37.7	-1.3	14.0	23.8	9.8
Metropolitan area	47.3	39.8	7.5	27.7	21.7	6.0	25.0	38.5	13.5
Rural counties	53.0	41.3	11.7	32.6	33.3	-0.7	14.4	25.4	11.0
1914.									
The State	39.3	31.0	8.3	40.1	39.3	0.8	20.6	29.7	9.1
Northern California	58.8	48.8	10.0	27.6	29.5	-1.9	13.6	21.7	8.1
Coast counties	59.3	48.2	11.1	22.5	24.1	-1.6	18.2	27.7	9.5
Interior counties	58.3	49.3	9.0	32.9	33.7	-0.8	8.8	17.0	8.2
Central California	48.9	38.3	10.6	27.5	28.4	-0.9	23.6	33.3	9.7
San Francisco	46.2	37.8	8.4	21.1	18.5	2.6	32.7	43.7	11.0
Other bay counties	51.5	40.6	10.9	27.5	27.3	0.2	21.0	32.1	11.1
Coast counties	56.8	44.4	12.4	25.0	24.9	0.1	18.2	30.7	12.5
Interior counties	46.7	35.2	11.5	35.5	40.1	-4.6	17.8	24.7	6.9
Southern California	21.3	16.5	4.8	60.0	56.8	4.1	17.8	26.7	8.9
Los Angeles	19.3	14.9	4.4	61.7	57.0	4.7	19.0	28.1	9.1
Other counties	21.8	20.6	4.2	59.5	56.0	3.5	15.7	23.4	7.7
Northern and Central California	50.3	39.9	10.4	27.5	28.5	-1.0	22.2	31.6	9.4
Coast counties	50.8	40.7	10.1	23.9	22.8	1.1	25.3	36.5	11.2
Interior counties	49.1	38.5	10.6	34.9	38.6	-3.7	16.0	22.9	6.9
Metropolitan area	48.4	39.0	9.4	23.9	22.3	1.6	27.7	38.7	11.0
Rural counties	52.1	40.8	11.3	31.1	34.4	-3.3	16.8	24.8	8.0

When the contrast is drawn between the nativity of single white brides and of white mothers, the excess heretofore noted in the per cents foreign born among mothers over brides is found also in the per cents for mothers over the single brides alone. However, while the per cents born in other states were considerably greater for all brides than for mothers in both 1915 and 1914, the per cents born elsewhere in the United States were notably greater for single white brides than for white mothers only in 1915, being also greater, but only slightly so, for single white brides than for white mothers in 1914. On the other hand, the excess in the per cent born in California among brides as compared with mothers remains very great when the widowed and divorced brides are eliminated and only the single brides are considered.

It appears from Table 7 that the single white brides surpassed the white mothers in the per cents born in California and in other states, though in much greater degree for California than for other Americans, while the mothers surpassed greatly the single brides in the per cent foreign born each year. Generally speaking, there was a marked excess in the per cent born in California among single brides over that among mothers; relatively little difference in the per cents born elsewhere in the United States for single brides and mothers; and a very great excess in the per cent born abroad among mothers over that for single brides.

Comparison of the annual average per cents for California in 1906 to 1915 shows that among native daughters the excess in the per cent for single brides over that for mothers was as great as 8.0 (41.6 against 33.6); among other Americans the excess in the per cent for single brides over that for mothers was merely 0.8 (38.9 against 38.1); and among the foreign the converse excess in the per cent for mothers over that for single brides was no less than 8.8 (28.3 against 19.5).

Reference to the preceding table shows that the excess in the per cent of native daughters among single white brides over that among mothers was 7.2 in 1915 (39.0 against 31.8), and was 8.3 in 1914 (39.3 against 31.0). In all parts of the state both years a considerably larger proportion of the single white brides than of the mothers were born in California.

The excess in the per cent born in California among single brides over that among mothers was much greater for northern and central California than for southern California. In all cases, however, the proportions born in the Golden State are much greater for the counties north of Tehachapi than for those to the south. The excess in the per cents born in California for single brides over those for mothers was somewhat less for the metropolitan area than for the rural counties north of Tehachapi and was likewise less for San Francisco than for the other bay counties.

Reference to Table 7 shows that the excess in the per cent of single white brides born in other states over that for white mothers was 4.1 in 1915 (42.6 against 38.5), but was merely 0.8 in 1914 (40.1 against 39.3). Moreover, this excess for single brides over mothers was confined in both years to San Francisco, the other bay counties and the adjoining coast counties of central California, as well as to southern California besides. For northern California and for the interior counties of central California the per cents born elsewhere in the

United States were somewhat greater each year among mothers than among single brides.

The relatively small excess in the per cent born in other states among single brides over that among mothers shown for the state in 1915 and 1914 was limited, therefore, practically to the metropolitan area north of Tehachapi, especially San Francisco alone, and to southern California as a whole, being particularly great in Los Angeles. For the rural counties of northern and central California, on the other hand, there was an excess in the per cents born elsewhere in the United States among mothers over the per cents among single brides.

Further reference to Table 7 indicates that the per cent born abroad for mothers surpassed that for single brides by 11.3 in 1915 (29.7 against 18.4) and by 9.1 in 1914 (29.7 against 20.6). In every geographic division each year the per cent foreign born was decidedly higher for white mothers than for single white brides.

The decided excess in the per cent foreign born among mothers over that among single brides was greatest in central California; next in southern California; and least in northern California. It is in central, southern, and northern California, in the order stated for the excess of mothers, that the per cents foreign born are likewise greatest among both mothers and brides. In the metropolitan area, where the foreign born element is especially prominent, the excess in the per cent foreign born for mothers over that for single brides was somewhat greater than for the rural counties north of Tehachapi. Yet while the foreign born population is massed in San Francisco more than in the suburbs, the excess in the per cent born abroad among mothers over that among single brides was slightly less for the main city each year than for the suburban counties.

The comparison of the nativity of white brides and mothers here made gives a rough measure of the relative fecundity of American and foreign born women in California. The figures indicate that in this state, as in the whole country, the foreign born women are more prone to bear children than are the American born, whether natives of California or of other states, for the proportion foreign born is much greater among mothers than among brides, whether the comparison is made for all brides or only the single ones. However, the proportion born elsewhere in the United States than California is considerably less among mothers than among all brides, though about the same for mothers as for single brides alone. The proportion born in the Golden State, moreover, is also considerably less among mothers than among either all or only the single brides.

The growing completeness of birth registration in California under the new law in effect from August 8, 1915, will make possible more accurate comparisons of the occurrence of births in different elements of the population. The remarkable increase in Japanese births in California in recent years is explained by the eagerness of Japanese to register births for special reasons connected with the right of land ownership here. In the absence of similar urgent necessity as yet for the registration of births of white children for the sake of their enjoyment in later years of the privilege of school attendance or the right to begin working for money, the relative completeness of the registration of births among different elements of the Caucasian population

must depend upon the general enforcement of birth registration requirements throughout the state as a whole.

The registration of births in California since 1905, when the system of state records was first established, does not seem to have been quite so complete as the registration of marriages. The former deficiency in the registration of births was probably greatest for births in the families of Californians and other Americans, since foreign born families from training abroad appear to realize the importance of promptly registering the births of their children. This deficiency in the registration of the births of children born to American mothers may account in part for the fact that comparison of per cents for brides and mothers in 1915 and 1914, as well as in the ten year period 1906 to 1915, indicates that the fecundity of foreign born women is greater than that of native women. However, the recent data for California agree with the results of earlier statistical investigations in other states, so that it is quite safe to conclude that foreign born women surpass the natives, whether born in California or elsewhere, in the proclivity to bear children.

CHILDREN IN ORDER OF BIRTH.

Geographic Divisions.—Special tabulations have been made for California in 1915 of births according to the number of children born to each mother. The data available for geographic divisions is presented in Table 8, below, together with per cents for convenience in making comparisons, but similar figures for individual counties may be obtained from Table 16, *post*.

TABLE 8.—Births Classified by Number of Children Born to Mother, with Per Cents, for Geographic Divisions: 1915.

Geographic division	Total live births: 1915	Number of children born to mother, including birth reported										
		One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten or more	Un-known
Numbers.												
The State -----	48,075	17,300	11,718	6,741	4,158	2,510	1,533	1,015	642	414	621	1,368
Northern California	4,562	1,454	1,068	680	444	314	151	130	74	43	61	113
Coast counties ---	1,923	636	480	280	201	114	55	62	33	21	21	40
Interior counties --	2,639	818	638	400	243	200	96	68	41	22	40	73
Central California..	25,499	9,310	6,259	3,632	2,209	1,284	817	517	338	212	311	610
San Francisco ---	7,624	3,088	1,826	969	600	348	207	146	70	63	79	218
Other bay counties	6,075	2,239	1,600	902	516	268	161	104	79	41	64	108
Coast counties ---	3,034	996	726	481	276	172	117	79	47	37	45	56
Interior counties --	8,766	2,975	2,107	1,280	817	498	332	188	142	71	123	233
Southern California	18,014	6,596	4,361	2,429	1,500	912	565	368	230	159	249	645
Los Angeles -----	12,106	4,577	2,985	1,584	960	554	328	216	150	92	155	515
Other counties ---	5,908	2,019	1,376	845	550	358	237	152	80	67	94	130
Northern and Central California -----	30,061	10,764	7,357	4,312	2,663	1,598	968	647	412	255	372	723
Coast counties ---	18,656	6,971	4,612	2,632	1,593	900	540	391	229	162	209	417
Interior counties --	11,406	3,793	2,745	1,680	1,060	698	428	256	183	93	163	306
Metropolitan area	13,699	5,337	3,426	1,871	1,116	614	368	250	149	104	143	321
Rural counties ---	16,362	5,427	3,931	2,441	1,537	984	600	397	263	151	229	402
Per cents.												
The State -----	100.0	36.1	24.4	14.0	8.6	5.2	3.2	2.1	1.3	0.9	1.3	2.9
Northern California	100.0	31.9	24.1	14.9	9.7	6.9	3.3	2.9	1.6	0.9	1.3	2.5
Coast counties ---	100.0	33.1	23.9	14.6	10.4	5.9	2.9	3.2	1.7	1.1	1.1	2.1
Interior counties --	100.0	31.0	24.2	15.2	9.2	7.6	3.6	2.6	1.5	0.8	1.5	2.8
Central California --	100.0	36.5	24.5	14.3	8.7	5.1	3.2	2.0	1.3	0.8	1.2	2.4
San Francisco ---	100.0	40.6	24.0	12.7	7.9	4.6	2.7	1.9	0.9	0.8	1.0	2.9
Other bay counties	100.0	36.9	26.3	14.8	8.5	4.4	2.6	1.7	1.3	0.7	1.1	1.7
Coast counties ---	100.0	32.9	23.9	15.9	9.1	5.7	3.9	2.6	1.5	1.2	1.5	1.8
Interior counties --	100.0	33.9	24.0	14.6	9.3	5.7	3.8	2.2	1.6	0.8	1.4	2.7
Southern California	100.0	36.6	24.2	13.5	8.3	5.1	3.1	2.0	1.3	0.9	1.4	3.6
Los Angeles -----	100.0	37.8	24.7	13.1	7.8	4.6	2.7	1.8	1.2	0.8	1.3	4.2
Other counties ---	100.0	34.2	23.3	14.3	9.3	6.1	4.0	2.6	1.3	1.1	1.6	2.2
Northern and Central California -----	100.0	35.8	24.5	14.3	8.8	5.3	3.2	2.2	1.4	0.9	1.2	2.4
Coast counties ---	100.0	37.4	24.7	14.1	8.6	4.8	2.9	2.1	1.2	0.9	1.1	2.2
Interior counties --	100.0	33.3	24.1	14.7	9.3	6.1	3.8	2.2	1.6	0.8	1.4	2.7
Metropolitan area	100.0	39.0	25.0	13.7	8.1	4.5	2.7	1.8	1.1	0.8	1.0	2.3
Rural counties ---	100.0	33.2	24.0	14.9	9.4	6.0	3.7	2.4	1.6	0.9	1.4	2.5

Reference to the per cents given in Table 8 shows that for California in 1915 some 36.1 per cent of all babies were the first born to the mother, 24.4 were the second born, 14.0 per cent were third born and 8.6 per cent were fourth born. As compared with 36.1 per cent for first born babies, the total was 47.0 for those who were the second, third or fourth born to the mother. Altogether 83.1 per cent of the births were in families with but one to four offspring as compared with merely 14.0 per cent for mothers bearing as many as five children or more, the order of birth being unknown for the remaining 2.9 per cent.

The per cent for babies who were only the first born to the mother is highest among geographic divisions for San Francisco, 40.6; next for Los Angeles, 37.8; and then for the group of other bay counties (including Alameda), 36.9. The per cent of first-born babies was much greater for the whole metropolitan area, 39.0, than for the rural counties north of Tehachapi, 33.2.

The aggregate per cent for babies who were the second, third or fourth born to the mother, however, was only 46.8 for the metropolitan area against 48.3 for the rural counties of northern and central California. The aggregate per cent for second, third and fourth-born babies was much less for San Francisco alone, 44.6, than for the group of suburban counties, 49.6. The aggregate per cent was also somewhat less for Los Angeles, 45.6, than for the rest of southern California, 46.9.

Similarly, the aggregate per cent for babies who were the fifth and over born to the mother was only 11.9 for the metropolitan area against 16.0 for the rural counties south of Tehachapi. The per cents for mothers bearing five children or more totaled virtually the same for San Francisco, 11.9, as for the adjoining bay counties, 11.8. However, the aggregate per cent was only 12.4 for Los Angeles as compared with 16.7 for the other counties south of Tehachapi.

Cities and Rest of State.—Table 9 presents corresponding data for the thirty-four freeholders' charter cities of California in 1915 in contrast with all the rest of the state, as well as for selected leading cities with at least 200 births in the year. Figures for cities not shown in Table 9 may be obtained from Table 17, *post*, among the general tables on statistics of births.

TABLE 9.—Births Classified by Number of Children Born to Mother, with Per Cents, for Cities and Rest of State and for Selected Leading Cities: 1915.

City (With at least 200 births reported)	Total live births: 1915	Number of children born to mother, including birth reported										
		One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten or more	Un- known
Numbers.												
California	48,075	17,360	11,718	6,741	4,153	2,510	1,533	1,015	642	414	621	1,366
Freeholders' charter cities	28,569	11,278	7,139	3,774	2,221	1,218	754	520	312	205	293	855
Northern California:												
Eureka	237	96	61	28	21	12	4	4	5	1	1	4
Central California:												
San Francisco	7,624	3,098	1,886	960	600	348	307	146	70	63	79	218
Alameda	443	178	111	67	45	11	7	4	3	4	5	8
Berkeley	765	306	203	109	63	30	15	16	12	5	7	—
Oakland	3,017	1,174	816	443	222	118	57	48	32	21	27	50
Richmond	328	98	98	54	34	17	9	7	8	1	2	—
San Jose	560	163	124	74	58	36	20	22	11	11	6	5
Watsonville	218	71	70	43	20	5	6	—	—	—	1	2
Fresno	707	294	164	97	48	35	25	11	10	4	13	6
Sacramento	1,253	490	341	157	100	46	41	21	13	8	6	30
Stockton	554	235	140	73	34	18	11	14	6	1	4	18
Southern California:												
Los Angeles	7,867	3,184	1,925	968	547	335	185	135	82	45	94	407
Long Beach	446	174	120	61	36	13	12	5	7	4	5	9
Pasadena	602	205	177	87	63	17	21	12	3	5	6	6
Pomona	201	77	38	31	24	9	7	3	—	1	1	10
Santa Monica	200	82	46	26	17	9	6	6	3	—	3	2
Riverside	274	87	67	42	25	16	11	9	8	—	4	5
San Bernardino	370	131	90	56	30	21	11	12	7	5	5	2
San Diego	1,018	417	271	133	64	45	29	17	7	5	4	26
Santa Barbara	296	121	51	44	25	13	9	5	3	2	3	19
Rest of State	19,506	6,082	4,579	2,967	1,932	1,292	779	495	330	200	328	513
Per cents.												
California	100.0	36.1	24.4	14.0	8.6	5.2	3.2	2.1	1.3	0.9	1.3	2.9
Freeholders' charter cities	100.0	39.5	25.0	13.2	7.8	4.3	2.6	1.8	1.1	0.7	1.0	3.0
Northern California:												
Eureka	100.0	40.5	25.7	11.8	8.9	5.1	1.7	1.7	2.1	0.4	0.4	1.7
Central California:												
San Francisco	100.0	40.6	24.0	12.7	7.9	4.6	2.7	1.9	0.9	0.8	1.0	2.9
Alameda	100.0	49.2	25.0	15.1	10.2	2.5	1.6	0.9	0.7	0.9	1.1	1.8
Berkeley	100.0	39.9	26.5	14.2	8.2	3.9	2.0	2.1	1.6	0.7	0.9	—
Oakland	100.0	38.9	27.0	14.7	7.4	3.9	1.9	1.6	1.1	0.7	0.9	1.9
Richmond	100.0	29.9	29.9	16.5	10.4	5.2	2.7	2.1	2.4	0.3	0.6	—
San Jose	100.0	34.5	22.1	13.2	10.3	6.4	3.6	3.9	2.0	2.0	1.1	0.9
Watsonville	100.0	32.6	32.1	19.7	9.2	2.3	2.7	—	—	—	0.5	0.9
Fresno	100.0	41.6	23.2	13.7	6.8	5.0	3.5	1.6	1.4	0.6	1.8	0.8
Sacramento	100.0	39.1	27.2	12.5	8.0	3.7	3.3	1.7	1.0	0.6	0.5	2.4
Stockton	100.0	42.4	25.3	13.2	6.1	3.3	2.0	2.5	1.1	0.2	0.7	3.2
Southern California:												
Los Angeles	100.0	40.5	24.5	12.2	6.9	4.1	2.3	1.6	1.0	0.6	1.1	5.2
Long Beach	100.0	39.0	26.9	13.7	8.1	2.9	2.7	1.1	1.6	1.1	0.9	2.0
Pasadena	100.0	34.1	29.4	14.4	10.5	2.8	3.5	2.0	0.5	0.8	1.0	1.0
Pomona	100.0	38.3	18.9	15.4	11.9	4.5	3.5	1.5	—	0.5	0.5	5.0
Santa Monica	100.0	41.0	23.0	13.0	8.5	4.5	3.0	3.0	1.5	—	1.5	1.0
Riverside	100.0	31.8	24.5	15.3	9.1	5.8	4.0	3.3	2.9	—	1.5	1.8
San Bernardino	100.0	35.4	24.3	15.1	8.1	5.7	3.0	3.2	1.9	1.4	1.4	0.5
San Diego	100.0	41.0	26.6	13.1	6.3	4.4	2.8	1.7	0.7	0.5	0.4	2.5
Santa Barbara	100.0	41.0	17.3	14.9	8.5	4.4	3.1	1.7	1.0	0.7	1.0	6.4
Rest of State	100.0	31.2	23.5	15.2	9.9	6.6	4.0	2.5	1.7	1.1	1.7	2.6

Comparison of the per cents in Table 9 for the thirty-four freeholders' charter cities as a class in contrast with all the rest of the state as a whole indicates that the per cent of first-born children was 39.5 for the chartered cities, as compared with only 31.2 for all the rest of the state, and that the per cent of second-born children was 25.0 for these cities, against only 23.5 for the outside territory. On the other hand, the per cents were greater for country districts than for cities as a class for mothers bearing children to the number of three, four, five, etc., to ten or more. Hence, for children who were only the first or second born to each mother the per cents totaled 64.5 for cities, in contrast with only 54.7 for country districts. For children who were the third or over born to each mother, however, the per cents for cities totaled merely 32.5, but for country districts were no less than 42.7.

Although the birth total was much greater in 1915 for chartered cities than for country districts, 28,569 against 19,506, yet the number was actually less within cities than outside them for births which were the fifth born (only 1,218 for cities, against 1,292 for country districts), sixth born (754 against 779), eighth born (312 against 330), ninth born (205 against 209), and tenth or over (293 against 328).

For births which were the fifth or over for each mother the total was only 3,302, or merely 11.5 per cent of all, in cities, as compared with 3,433, or 17.6 per cent of all, in country districts.

A brief summary shows that the per cent of first born children was 39.5 within chartered cities, but only 31.2 outside them; for second, third and fourth born was altogether 46.0 for cities against 48.6 for country districts; and for babies who were the fifth or over was merely 11.5 in cities as compared with 17.6 in rural territory.

It seems therefore that in cities, to which population has been drifting from country districts, the number of children born to each mother is considerably less than in the outside or rural territory. With city families relatively small, the population of cities must continue to grow largely by migration from country districts or even by immigration from foreign countries.

The per cents shown in Table 9 for selected leading cities with at least 200 births reported for 1915 are presented to permit of the making of some comparisons between such cities with respect to the number of children born to mothers.

Among the twenty leading cities with at least 200 births reported for 1915 the per cents for babies who were only the first born to the mother were highest as follows: Stockton, 42.4; Fresno, 41.6; San Diego, Santa Barbara and Santa Monica, each 41.0; San Francisco, 40.6; Eureka and Los Angeles, each 40.5; and Alameda, 40.2.

The aggregate per cents for second, third and fourth born children were highest as follows among the twenty cities: Watsonville, 61.0; Richmond, 56.8; Pasadena, 54.3; Alameda, 50.3; Oakland, 49.1; Berkeley and Riverside, each 48.9; Long Beach, 48.7; Sacramento, 47.7; and San Bernardino, 47.5.

The aggregate per cents for mothers bearing five children or more were highest among the leading cities as follows: San Jose, 19.0; Riverside, 17.5; San Bernardino, 16.6; Fresno, 13.9; Santa Monica, 13.5; Richmond, 13.3; San Francisco and Santa Barbara, each 11.9; Eureka, 11.4; and Berkeley, 11.2.

TABLE 10.—Births Classified by Sex and Race, and by

County	Total live births	Male	Female	White			Negro	Indian
				Total	Male	Female		
California	48,075	24,772	23,303	43,874	22,783	21,291	392	38
Alameda	4,000	2,315	2,255	4,214	2,138	2,076	47	1
Alpine	4	2	2	4	2	2		
Amador	139	64	75	138	61	74		
Butte	513	265	248	487	249	238	1	2
Calaveras	71	21	32	71	39	32		
Colusa	140	68	72	135	66	69		
Contra Costa	707	382	325	675	368	307	1	
Del Norte	53	28	25	52	27	25		1
El Dorado	102	50	52	101	49	52		
Fresno	1,983	1,068	915	1,728	937	791	9	
Glenn	106	59	47	105	59	46		
Humboldt	448	220	228	446	219	227		2
Imperial	421	232	189	384	209	175	7	
Inyo	18	8	10	16	7	9		
Kern	685	361	324	656	347	309	5	
Kings	350	169	181	310	152	158		
Lake	82	42	40	81	42	39		
Lassen	110	62	48	110	62	48		
Los Angeles	12,106	6,160	5,946	10,912	5,529	5,383	225	4
Madera	197	91	106	195	89	106	1	1
Marin	271	134	137	266	132	134		
Mariposa	31	20	11	29	18	11		1
Mendocino	357	185	172	350	181	169		3
Merced	391	232	159	384	226	158		1
Modoc	110	57	53	109	56	53		1
Mono	1		1	1		1		
Monterey	360	176	184	292	145	147		
Napa	207	107	100	206	106	100		
Nevada	187	98	89	186	98	88		
Orange	1,185	635	550	1,094	590	504	2	
Placer	374	203	171	290	150	130	1	
Plumas	50	27	32	56	26	30		1
Riverside	611	300	311	569	276	293	15	3
Sacramento	1,628	810	818	1,264	629	635	3	3
San Benito	213	101	112	164	78	86	1	
San Bernardino	1,211	609	602	1,166	588	578	8	4
San Diego	1,472	737	735	1,422	712	710	13	1
San Francisco	7,624	3,944	3,680	7,147	3,691	3,456	18	
San Joaquin	1,031	519	512	854	428	426	6	
San Luis Obispo	313	169	144	297	159	138	1	
San Mateo	497	258	239	480	249	231	2	
Santa Barbara	590	312	278	524	288	236	4	
Santa Clara	1,673	879	794	1,495	789	706	3	
Santa Cruz	475	237	238	313	170	173		
Shasta	251	119	132	249	118	131	1	1
Sierra	38	18	20	38	18	20		
Siskiyou	307	151	156	301	148	153		6
Solano	400	221	176	339	197	142	6	
Sonoma	745	412	333	705	388	317		1
Stanislaus	616	320	287	606	321	285		
Sutter	119	62	57	109	56	51		1
Tehama	166	83	83	162	82	80		
Trinity	31	16	15	31	16	15		
Tulare	828	426	402	778	395	383	2	
Tuolumne	51	27	24	51	27	21		
Ventura	418	227	191	383	204	179	1	
Yolo	240	122	118	194	93	101	3	
Yuba	159	92	67	130	81	49	6	

Sex and Nativity of Mothers, for Counties; 1915.

Chinese	Japanese	White children with mothers								
		Born in California			Born in other states			Foreign born		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
429	3,342	13,941	7,144	6,797	16,914	8,712	8,202	13,019	6,723	6,296
71	267	1,747	896	852	1,223	624	599	1,244	619	625
1		3	1	2	1	1				
3	20	76	38	38	13	5	8	49	21	28
		216	112	104	208	100	99	63	28	35
		45	22	23	14	9	5	12	8	4
2	3	94	48	46	30	11	19	11	7	4
	31	217	123	94	152	74	78	306	171	135
		13	8	5	25	14	11	14	5	9
	1	63	28	35	22	15	7	16	6	10
8	238	391	207	184	766	401	365	571	329	242
	1	34	18	16	55	34	21	16	7	9
		197	101	96	98	45	53	151	73	78
	30	36	21	14	274	144	130	75	44	31
	2	12	6	6	4	1	3			
11	13	151	76	75	370	196	174	135	75	60
13	27	120	53	67	118	57	61	72	42	30
	1	49	26	23	23	11	12	9	5	4
		52	31	21	33	16	17	25	15	10
30	935	1,608	777	831	6,242	3,197	3,045	3,062	1,555	1,507
		72	38	34	63	22	41	60	29	31
1	4	114	52	62	44	24	20	108	56	52
	1	20	11	9	8	6	2	1	1	
	4	198	107	86	63	33	30	94	41	53
2	4	116	71	45	123	70	53	145	85	60
		65	34	31	39	20	19	5	2	3
								1		1
5	63	156	79	77	52	27	25	84	39	45
	1	114	67	47	52	23	29	40	16	24
1		100	48	52	31	20	19	47	30	17
	89	219	134	85	617	316	301	258	140	118
5	88	125	61	64	75	44	31	80	45	35
1	1	29	14	15	17	7	10	10	5	5
	24	96	40	56	336	160	176	138	70	68
23	336	562	278	274	381	183	198	331	168	163
3	45	111	51	60	22	11	11	31	16	15
	33	204	107	97	651	339	312	311	142	169
4	32	277	139	138	827	435	392	318	138	180
196	263	2,886	1,451	1,381	1,277	648	629	3,035	1,588	1,447
13	156	410	197	213	206	133	132	179	98	81
1	14	177	96	82	56	26	30	64	38	26
1	14	171	90	81	84	40	44	225	119	106
6	56	236	130	106	147	82	65	142	74	68
8	167	502	307	285	379	198	181	524	284	240
5	127	156	74	82	96	48	48	91	48	43
		126	62	64	81	38	43	42	18	24
		31	13	18	3	1	2	4	4	
		117	66	52	83	40	43	101	43	58
5	50	166	86	79	91	50	32	83	52	31
1	38	337	183	154	176	106	70	192	99	93
	10	177	95	82	297	156	141	132	70	62
1	8	62	30	32	32	18	14	15	10	5
1	8	74	39	35	76	37	39	12	6	6
		27	13	14	4	3	1			
1	47	206	98	108	426	222	204	146	75	71
		30	15	15	8	5	3	13	7	6
2	32	144	78	66	161	89	72	78	37	41
1	42	104	48	56	60	32	28	30	13	17
3	20	80	58	27	32	21	11	18	7	11

TABLE 11.—Births Classified by Sex and Race, and

County	Total live births	Male	Female	White		Negro	Indian
				Total	Male	Female	
California	46,012	23,792	22,220	42,281	21,791	20,490	388
Alameda	4,519	2,302	2,217	4,141	2,112	2,029	46
Alpine	4	3	1	4	3	1	
Amador	122	65	57	122	65	57	
Butte	472	240	232	453	231	222	
Calaveras	76	40	36	74	39	35	2
Colusa	125	64	61	117	59	58	1
Contra Costa	573	277	296	549	264	285	2
Del Norte	39	17	22	39	17	22	
El Dorado	94	50	44	92	49	43	
Fresno	1,827	901	926	1,549	752	797	13
Glenn	120	65	55	118	64	54	
Humboldt	508	276	232	497	268	229	1
Imperial	324	164	160	286	150	136	12
Inyo	19	12	7	19	12	7	
Kern	61	323	318	612	313	299	2
Kings	300	151	149	284	131	153	1
Lake	71	33	38	70	33	37	
Lassen	85	48	37	85	48	37	
Los Angeles	12,378	6,418	5,960	11,398	5,894	5,504	231
Madera	184	93	91	182	91	91	1
Marin	23	125	118	235	122	113	
Mariposa	21	13	8	18	11	7	
Mendocino	287	151	136	267	140	127	
Merced	307	166	141	299	162	137	
Modoc	86	45	41	85	45	40	
Mono	9	4	5	9	4	5	
Monterey	312	167	145	235	128	107	1
Napa	183	96	87	181	95	86	
Nevada	156	78	78	153	76	77	
Orange	692	386	306	623	343	280	1
Placer	307	170	137	211	133	108	1
Plumas	46	22	24	45	21	24	
Riverside	622	321	301	586	298	288	14
Sacramento	1,666	880	786	1,318	678	640	9
San Benito	124	69	55	98	51	42	
San Bernardino	1,098	555	538	1,062	541	521	2
San Diego	1,557	814	733	1,508	785	723	17
San Francisco	7,646	3,956	3,690	7,189	3,720	3,469	20
San Joaquin	936	460	476	811	396	415	1
San Luis Obispo	291	148	143	278	141	137	
San Mateo	507	276	231	493	266	227	2
Santa Barbara	476	235	241	424	205	219	
Santa Clara	1,463	724	739	1,322	646	676	1
Santa Cruz	481	247	234	349	181	168	
Shasta	251	125	126	249	124	125	
Sierra	42	25	17	42	25	17	
Siskiyou	327	174	153	319	173	146	
Solano	402	212	190	364	190	174	1
Sonoma	692	371	321	661	348	313	
Stanislaus	603	326	277	591	319	272	3
Sutter	87	42	45	82	42	40	
Tehama	160	85	75	155	88	72	1
Trinity	29	14	15	29	14	15	
Tulare	689	377	312	645	346	299	1
Tuolumne	33	19	14	33	19	14	
Ventura	332	182	150	306	171	135	
Yolo	243	118	125	197	91	106	3
Yuba	130	72	58	113	63	50	1

* Figures shown for each county are for county exclusive of freeholders' charter city or cities.

by Sex and Nativity of Mothers, for Counties: 1914.

Chinese	Japa- nese	White children with mothers								
		Born in California			Born in other states			Foreign born		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
418	2,874	13,097	6,710	6,387	16,028	8,504	8,124	12,556	6,577	5,979
61	270	1,763	908	855	1,224	612	612	1,154	597	557
		3	2	1				1	1	
		59	31	28	14	10	4	49	24	25
1	18	186	100	86	211	102	109	56	29	27
		53	29	24	12	6	6	9	4	5
2	5	76	35	41	34	18	16	7	6	1
2	20	196	90	106	129	67	62	224	107	117
		15	9	6	16	8	13	8	5	3
	2	55	29	26	29	13	16	8	7	1
16	219	369	174	195	690	325	365	500	253	247
	2	56	33	23	42	19	23	20	12	8
		236	123	108	109	54	55	162	91	71
1	25	85	17	18	208	104	104	43	29	14
		6	3	3	11	9	2	2		2
11	16	186	61	75	350	181	169	126	71	55
5	30	89	43	46	118	55	58	62	33	29
		47	23	24	20	8	12	3	2	1
		37	16	21	36	24	12	12	8	4
28	717	1,693	885	908	6,501	3,350	3,151	3,204	1,659	1,545
		47	27	20	67	30	37	68	34	34
2	6	87	41	46	44	23	21	104	58	46
1	1	12	9	3	6	2	4			
4	7	135	69	66	55	30	25	77	41	36
1	7	109	60	49	84	45	39	106	57	49
		44	23	21	36	18	18	5	4	1
		4	1	3	1	1		4	2	2
3	73	139	77	62	42	23	19	54	28	26
1	1	87	44	43	50	27	23	44	24	20
3		84	48	36	24	11	13	45	17	28
	68	133	68	65	372	202	170	118	73	45
3	62	109	58	51	79	45	34	53	30	23
1		26	14	12	10	4	6	9	3	6
1	19	99	50	49	361	177	184	126	71	55
24	314	569	280	289	424	212	212	325	186	139
4	27	53	23	30	11	8	3	29	20	9
	29	196	102	91	580	293	287	286	146	140
3	25	249	136	113	909	469	440	350	180	170
196	240	2,722	1,390	1,332	1,328	695	633	3,189	1,635	1,504
14	110	394	189	205	274	138	136	143	69	74
1	12	139	67	72	82	40	42	57	34	23
1	11	153	86	67	81	36	45	259	141	115
1	51	176	82	94	131	61	70	117	62	55
5	135	538	263	270	331	165	166	458	218	240
6	126	147	77	70	100	51	49	102	53	49
	1	150	75	75	54	26	28	45	23	22
		29	15	14	6	5	1	7	5	2
		124	71	63	100	52	48	85	50	35
3	31	173	86	87	92	54	38	99	50	49
1	28	307	165	142	167	77	90	187	106	81
	9	165	88	77	285	154	131	141	77	61
1	4	42	26	16	26	12	14	14	4	10
	3	69	38	31	72	39	33	14	6	8
		23	12	11	3	1	2	3	1	2
6	37	178	88	85	367	205	162	105	53	52
		18	11	7	5	3	2	10	5	5
5	21	97	59	38	126	61	65	83	51	32
	43	110	46	64	63	31	32	24	14	10
	16	71	40	31	31	18	13	11	5	6

TABLE 12.—Births Classified by Sex and Race, and

City	Total live births	Male	Female	White			Negro	Indian
				Total	Male	Female		
81 freeholders' charter cities	28,500	14,502	13,977	26,408	13,483	12,925	320	11
*Alameda County	374	207	167	329	176	153	5	-----
Alameda	443	227	216	390	197	192	4	-----
Berkeley	766	406	361	709	373	336	2	-----
Oakland	3,017	1,506	1,511	2,787	1,392	1,395	36	1
Contra Costa County	379	214	165	357	205	152	-----	-----
Richmond	323	168	160	318	163	155	1	-----
Fresno County	1,276	688	588	1,078	592	486	5	-----
Fresno	707	380	327	650	345	305	4	-----
Humboldt County	211	105	106	210	104	106	-----	1
Eureka	237	115	122	236	115	121	-----	1
Kern County	513	276	237	496	264	232	4	-----
Bakersfield	172	85	87	167	88	84	1	-----
Los Angeles County	2,746	1,300	1,356	2,302	1,151	1,151	16	-----
Alhambra	44	21	20	44	24	20	-----	-----
Long Beach	446	236	210	415	218	197	-----	-----
Los Angeles	7,867	3,976	3,891	7,198	3,630	3,568	177	4
Pasadena	602	318	284	598	299	299	22	-----
Pomona	201	108	98	197	101	96	2	-----
Santa Monica	200	113	87	188	106	82	8	-----
Marin County	161	82	82	156	80	79	-----	-----
San Rafael	107	52	55	107	52	55	-----	-----
Monterey County	204	104	100	156	83	73	-----	-----
Monterey	98	44	54	81	37	44	-----	-----
Salinas	58	28	30	55	25	30	-----	-----
Napa County	88	44	44	88	44	44	-----	-----
Napa	119	63	56	118	62	56	-----	-----
Nevada County	113	58	55	113	58	55	-----	-----
Grass Valley	74	40	34	73	40	33	-----	-----
Riverside County	337	172	165	331	168	163	1	3
Riverside	274	128	146	238	108	130	14	-----
Sacramento County	375	199	176	167	91	76	-----	-----
Sacramento	1,253	611	642	1,097	538	559	3	3
San Bernardino County	841	423	418	810	406	404	5	2
San Bernardino	370	186	181	356	182	174	3	1
San Diego County	451	233	221	437	224	213	2	-----
San Diego	1,018	504	514	985	488	497	11	1
San Francisco (city and county)	7,624	3,944	3,680	7,147	3,691	3,456	18	-----
San Joaquin County	477	229	248	364	171	193	1	-----
Stockton	554	290	264	490	257	233	5	-----
San Luis Obispo County	203	114	89	190	105	85	1	-----
San Luis Obispo	110	55	55	107	54	53	-----	-----
Santa Barbara County	295	147	148	255	132	123	1	-----
Santa Barbara	295	165	130	269	154	115	3	-----
Santa Clara County	1,065	582	483	919	503	416	1	-----
Palo Alto	48	13	35	38	12	26	-----	-----
San Jose	560	284	276	538	274	264	2	-----
Santa Cruz County	106	60	46	92	52	40	-----	-----
Santa Cruz	151	69	82	118	66	82	-----	-----
Watsonville	218	108	110	103	52	51	-----	-----
Solano County	211	116	95	159	92	67	2	-----
Vallejo	189	108	81	180	105	75	4	-----
Sonoma County	450	248	202	417	228	189	-----	1
Petaluma	117	62	55	115	61	54	-----	-----
Santa Rosa	178	102	76	173	99	74	-----	-----
Stanislaus County	492	249	243	482	241	241	-----	-----
Modesto	124	80	44	124	80	44	-----	-----

*Figures shown for each county are for county exclusive of freeholders' charter city or cities.

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by Sex and Nativity of Mothers, for Cities: 1915.

Chinese	Japanese	White children with mothers								
		Born in California			Born in other states			Foreign born		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
345	1,485	8,068	4,106	3,967	9,523	5,024	4,504	8,487	4,349	4,138
2	38	151	75	76	73	41	32	105	60	45
1	49	194	96	98	82	43	39	113	58	55
7	48	288	161	127	243	127	116	178	85	93
61	132	1,114	563	551	825	413	412	848	416	432
-----	22	110	66	44	55	30	25	192	109	83
-----	9	107	57	50	97	44	53	114	62	52
-----	198	219	111	108	498	273	225	361	206	153
8	45	172	96	76	268	128	140	210	121	89
-----	-----	91	45	46	46	22	24	73	37	36
-----	-----	106	56	50	52	23	29	78	36	42
9	11	113	60	53	288	155	133	88	49	39
2	2	38	16	22	82	41	41	47	26	21
2	426	400	199	201	1,307	652	655	596	300	296
-----	-----	5	1	4	28	17	11	11	6	5
-----	31	47	21	26	307	165	142	61	32	29
28	460	1,028	495	533	3,957	2,008	1,949	2,213	1,127	1,086
-----	12	67	37	30	382	208	174	119	54	65
-----	2	22	6	16	154	85	69	21	10	11
-----	4	39	18	21	107	62	45	42	26	16
1	4	63	28	35	29	15	14	67	37	30
-----	-----	51	24	27	15	9	6	41	19	22
2	46	84	44	40	26	16	10	46	23	23
1	16	87	18	19	16	6	10	28	13	15
2	1	35	17	18	10	5	5	10	3	7
-----	-----	55	32	23	14	6	8	19	6	13
-----	1	59	35	24	38	17	21	21	10	11
-----	-----	59	29	30	20	9	11	34	20	14
1	-----	41	19	22	19	11	8	13	10	3
-----	2	45	19	26	205	109	96	81	40	41
-----	22	50	21	29	131	57	74	57	30	27
15	193	72	41	31	47	24	23	48	26	22
8	142	480	237	243	334	159	175	283	142	141
-----	23	122	63	59	466	240	226	222	108	119
-----	10	82	44	38	185	99	86	89	39	50
-----	15	99	51	48	290	142	148	78	31	47
4	17	178	88	90	567	293	274	240	107	133
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
196	268	2,335	1,451	1,384	1,277	648	629	3,035	1,588	1,447
2	110	156	75	81	129	59	70	79	37	42
11	48	254	122	132	136	74	62	100	61	39
-----	12	104	56	48	39	20	19	47	29	18
1	2	73	39	34	17	6	11	17	9	8
-----	39	141	79	65	57	25	32	54	28	26
6	17	91	51	40	90	57	33	88	46	42
7	138	390	201	189	243	138	105	236	164	122
-----	10	10	3	7	18	4	14	10	5	5
1	19	192	108	89	118	56	62	228	115	113
-----	14	38	21	17	25	15	10	29	16	13
-----	3	71	30	41	49	22	27	28	14	14
5	110	47	23	24	22	11	11	34	18	16
4	46	78	39	39	31	22	9	50	31	19
1	4	87	47	40	60	37	23	33	21	12
-----	32	198	102	91	97	57	40	127	69	58
-----	2	67	36	31	24	12	12	24	13	11
1	4	77	45	32	55	37	18	41	17	24
-----	10	128	65	63	234	116	118	120	60	60
-----	-----	49	30	19	63	40	23	12	10	2

TABLE 13. Births Classified by Sex and Race, and

City	Total live births	Male	Female	White			Negro	Indian
				Total	Male	Female		
32 freeholders' charter cities	28,594	14,740	13,854	26,654	13,724	12,930	328	12
*Alameda County	355	188	167	312	161	148	3	---
Alameda	414	215	199	362	189	173	1	---
Berkeley	813	418	400	745	381	364	5	---
Oakland	2,387	1,486	1,451	2,722	1,378	1,344	37	1
Contra Costa County	289	142	147	273	132	141	---	---
Richmond	284	135	149	276	133	144	2	---
Fresno County	1,066	537	559	882	422	460	8	---
Fresno	731	364	367	667	330	337	5	---
Humboldt County	263	131	132	254	125	129	1	8
Eureka	245	145	100	243	143	100	---	2
Los Angeles County	2,655	1,367	1,288	2,529	1,186	1,143	17	---
Long Beach	473	241	232	451	231	220	1	---
Los Angeles	8,222	4,269	3,953	7,618	3,951	3,667	196	4
Pasadena	635	333	302	619	324	295	9	---
Pomona	200	108	97	197	102	95	1	---
Santa Monica	193	105	88	184	100	84	7	---
Marin County	142	72	70	137	71	66	---	---
San Rafael	101	58	48	98	51	47	---	---
Monterey County	210	108	102	140	72	68	---	---
Monterey	55	33	22	50	31	19	1	---
Salinas	47	26	21	45	25	20	---	---
Napa County	72	33	39	71	32	39	---	---
Napa	111	63	48	110	63	47	---	---
Nevada County	113	57	56	111	55	56	---	---
Grass Valley	43	21	22	42	21	21	---	---
Riverside County	323	166	157	318	164	154	---	2
Riverside	299	155	144	268	134	134	14	---
Sacramento County	876	233	158	164	97	67	2	---
Sacramento	1,280	657	633	1,154	581	573	7	1
San Bernardino County	752	377	375	733	370	363	1	---
San Bernardino	341	178	163	329	171	158	1	---
San Diego County	456	231	225	445	224	221	1	2
San Diego	1,101	583	518	1,063	561	502	16	2
San Francisco (city and county)	7,646	3,956	3,690	7,189	3,729	3,460	20	1
San Joaquin County	533	257	276	444	215	229	---	---
Stockton	408	203	200	367	181	186	1	---
San Luis Obispo County	171	97	74	159	90	69	---	---
San Luis Obispo	120	51	69	119	51	68	---	---
Santa Barbara County	270	144	126	231	120	111	---	---
Santa Barbara	206	91	115	198	95	103	---	---
Santa Clara County	822	411	411	692	338	354	---	---
Palo Alto	66	39	27	62	33	29	---	---
San Jose	575	274	301	568	270	298	1	---
Santa Cruz County	111	59	52	93	52	41	---	---
Santa Cruz	160	80	80	158	78	80	---	---
Watsonville	210	108	102	98	51	47	---	---
Solano County	202	101	101	170	83	87	---	---
Vallejo	209	111	89	194	107	87	1	---
Sonoma County	358	195	163	332	175	157	---	1
Petaluma	147	77	70	147	77	70	---	---
Santa Rosa	187	99	88	182	96	86	---	1
Stanislaus County	464	253	211	457	248	209	1	---
Modesto	139	73	66	134	71	63	2	---

*Figures shown for each county are for county exclusive of freeholders' charter city or cities.

by Sex and Nativity of Mothers, for Cities: 1914.

Chinese	Japa- nese	White children with mothers								
		Born in California			Born in other states			Foreign born		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
338	1,262	7,924	4,058	3,866	10,185	5,211	4,974	8,545	4,455	4,090
	40	155	79	76	72	39	33	85	46	39
	51	174	84	90	99	58	41	89	47	42
2	61	299	154	145	269	129	140	177	98	79
50	118	1,135	586	549	784	386	398	808	406	397
1	15	103	47	56	51	28	23	119	59	60
1	5	98	43	55	78	41	37	105	48	57
2	204	185	80	105	404	200	204	293	142	151
14	45	174	94	80	286	125	161	207	111	96
		123	62	61	51	26	25	80	37	43
		103	61	42	58	28	30	82	54	28
	309	379	195	184	1,320	674	646	630	317	313
	21	60	27	33	834	171	163	57	33	24
28	376	1,181	606	578	4,185	2,122	2,013	2,349	1,223	1,126
	7	58	29	29	450	235	215	111	60	51
	2	36	18	18	146	78	68	15	6	9
	2	26	10	16	116	70	46	42	20	22
1	4	51	21	30	26	11	15	57	36	21
1	2	33	17	16	18	12	6	47	22	25
	70	84	44	40	23	12	11	33	16	17
1	3	25	15	10	14	8	6	11	8	3
2		30	18	12	5	3	2	10	4	6
	1	37	14	23	13	7	6	21	11	10
1		50	30	20	37	20	17	23	13	10
2		56	32	24	18	9	9	37	14	23
1		23	16	12	6	2	4	8	3	5
	3	65	35	30	199	108	96	54	26	28
1	16	34	15	19	162	74	88	72	45	27
14	196	85	48	37	47	28	19	32	21	11
10	118	484	232	252	377	181	193	293	165	128
	11	121	71	53	399	195	204	210	101	106
	11	72	31	41	181	98	83	76	42	34
1	7	87	49	38	259	116	143	99	59	40
2	18	162	87	75	650	333	297	251	121	130
196	240	2,722	1,390	1,332	1,328	695	633	3,139	1,635	1,504
7	82	194	88	106	162	78	84	88	49	39
7	28	200	101	99	112	60	52	55	20	35
	12	71	38	36	45	27	18	40	25	15
1		65	29	36	37	13	24	17	9	8
1	38	95	48	47	66	33	33	70	39	31
	13	81	34	47	65	28	37	47	23	24
2	128	295	147	148	183	92	91	214	99	115
1	3	26	16	10	22	19	3	14	8	11
2	4	212	100	112	126	54	72	230	116	114
	18	35	21	14	21	11	10	37	20	17
	2	68	31	37	56	30	26	31	17	17
6	106	44	25	19	23	10	13	31	16	15
2	30	79	35	44	39	21	18	52	27	25
1	4	94	51	43	53	33	20	47	23	24
	25	145	79	66	81	44	37	106	52	54
		80	43	37	30	11	19	37	23	14
1	3	82	43	39	56	22	34	44	31	13
	6	125	66	59	213	115	98	119	67	52
	3	40	22	18	72	39	33	22	10	12

TABLE 14. Births Classified by Sex, Race, and Nativity of Mothers, with Per Centa by Sex, for Geographic Divisions: 1915 and 1914.

Geographic division, and race or nativity of mother	Births						Per cent male		Per cent female	
	Total		Male		Female		1915	1914	1915	1914
	1915	1914	1915	1914	1915	1914				
The State	48,075	46,012	24,772	23,792	23,303	22,220	51.5	51.7	48.5	48.3
White	43,874	42,281	22,583	21,791	21,291	20,490	51.5	51.5	48.5	48.5
Born in California	13,941	13,097	7,144	6,710	6,797	6,387	51.2	51.2	48.8	48.8
Born in other states	16,914	16,628	8,712	8,504	8,202	8,124	51.5	51.1	48.5	48.9
Foreign born	13,019	12,556	6,723	6,577	6,296	5,979	51.6	52.4	48.4	47.6
Non-Caucasian	4,201	3,731	2,189	2,001	2,012	1,730	52.1	53.6	47.9	46.4
Northern California	4,562	4,263	2,374	2,213	2,188	1,990	52.0	52.7	48.0	47.3
White	4,328	4,001	2,250	2,102	2,078	1,899	52.0	52.5	48.0	47.5
Born in California	2,135	1,953	1,133	1,037	1,002	916	53.1	53.1	46.9	46.9
Born in other states	1,244	1,181	651	593	593	588	52.3	50.2	47.7	49.3
Foreign born	949	867	466	472	483	396	49.1	54.4	50.9	45.6
Non-Caucasian	234	202	124	111	110	91	53.0	55.0	47.0	45.0
Coast counties	1,023	1,809	1,010	968	913	851	52.5	53.0	47.5	47.0
White	1,871	1,744	979	915	892	829	52.3	52.5	47.7	47.5
Born in California	930	840	506	445	425	395	54.3	53.0	45.7	47.0
Born in other states	441	420	235	200	206	220	53.3	47.6	46.7	52.4
Foreign born	500	484	239	270	261	214	47.8	55.8	52.2	44.3
Non-Caucasian	52	65	31	43	21	22	59.6	66.2	40.4	33.3
Interior counties	2,639	2,394	1,364	1,255	1,275	1,139	51.7	52.4	48.3	47.6
White	2,457	2,257	1,271	1,187	1,196	1,070	51.7	52.6	48.3	47.4
Born in California	1,205	1,113	628	592	577	521	52.1	53.2	47.9	46.8
Born in other states	803	761	416	393	387	368	51.8	51.6	48.2	48.4
Foreign born	449	383	227	202	222	181	50.6	52.7	49.4	47.3
Non-Caucasian	182	137	93	68	89	69	51.1	49.6	48.9	50.4
Central California	23,490	24,335	13,186	12,504	12,313	11,831	51.7	51.4	48.3	48.6
White	23,062	22,987	11,939	11,302	11,153	10,785	51.7	51.2	48.3	48.3
Born in California	8,989	8,466	4,585	4,274	4,404	4,192	51.0	50.5	49.0	49.5
Born in other states	6,415	6,259	3,293	3,174	3,122	3,065	51.3	51.0	48.7	49.0
Foreign born	7,688	7,362	4,057	3,834	3,631	3,528	52.8	52.1	47.2	47.9
Non-Caucasian	2,407	2,248	1,247	1,202	1,160	1,046	51.8	53.5	48.2	46.5
San Francisco	7,624	7,646	3,944	3,956	3,680	3,600	51.7	51.7	48.3	48.3
White	7,147	7,189	3,601	3,720	3,456	3,469	51.6	51.7	48.4	48.3
Born in California	2,835	2,722	1,451	1,390	1,384	1,332	51.2	51.1	48.8	48.9
Born in other states	1,277	1,328	648	605	629	633	50.7	52.3	49.3	47.7
Foreign born	3,035	3,139	1,588	1,635	1,447	1,504	52.3	52.1	47.7	47.9
Non-Caucasian	477	457	233	236	224	221	53.0	51.6	47.0	48.4
Other bay counties	6,075	5,842	3,119	2,980	2,956	2,892	51.3	51.0	48.7	49.0
White	5,635	5,418	2,887	2,764	2,748	2,654	51.2	51.0	48.8	49.0
Born in California	2,249	2,199	1,160	1,120	1,089	1,079	51.6	50.9	48.4	49.1
Born in other states	1,503	1,478	762	738	741	740	50.7	49.9	49.3	50.1
Foreign born	1,883	1,741	965	906	918	835	51.2	52.0	48.8	48.0
Non-Caucasian	440	424	232	216	208	208	52.7	50.9	47.3	49.1
Coast counties	3,034	2,671	1,562	1,355	1,472	1,316	51.5	50.7	48.5	49.3
White	2,591	2,277	1,341	1,147	1,250	1,130	51.8	50.4	48.2	49.6
Born in California	1,192	1,011	606	507	586	504	50.8	50.1	49.2	49.9
Born in other states	615	566	310	287	295	279	51.2	50.7	48.8	49.3
Foreign born	794	700	425	353	369	347	53.5	50.4	46.5	49.6
Non-Caucasian	443	394	221	208	222	186	49.9	52.8	50.1	47.2
Interior counties	8,766	8,176	4,561	4,213	4,205	3,963	52.0	51.5	48.0	48.5
White	7,719	7,293	4,029	3,671	3,699	3,532	52.1	51.0	47.9	49.0
Born in California	2,713	2,534	1,398	1,257	1,345	1,277	50.4	49.6	49.6	50.4
Born in other states	3,030	2,887	1,573	1,474	1,457	1,413	51.9	51.1	48.1	48.9
Foreign born	1,976	1,782	1,079	940	897	842	54.6	52.7	45.4	47.3
Non-Caucasian	1,047	973	541	542	506	431	51.7	55.7	48.3	44.3
Southern California	18,014	17,474	9,212	9,075	8,802	8,399	51.1	51.9	48.9	48.1
White	16,454	16,193	8,394	8,387	8,060	7,806	51.0	51.8	49.0	48.2
Born in California	2,817	2,678	1,426	1,399	1,391	1,279	50.6	52.2	49.4	47.8
Born in other states	9,255	9,188	4,768	4,717	4,487	4,471	51.5	51.3	48.5	48.7
Foreign born	4,382	4,327	2,200	2,271	2,182	2,056	50.2	52.5	49.8	47.5
Non-Caucasian	1,569	1,281	818	688	742	593	52.4	53.7	47.6	46.3
Los Angeles	12,106	12,378	6,160	6,418	5,946	5,990	50.9	51.9	49.1	48.1
White	10,912	11,396	5,529	5,894	5,383	5,504	50.7	51.7	49.3	48.3
Born in California	1,608	1,603	777	885	831	808	48.3	52.3	51.7	47.7
Born in other states	6,242	6,501	3,197	3,350	3,045	3,151	51.2	51.5	48.8	48.5
Foreign born	3,062	3,204	1,555	1,659	1,507	1,545	50.8	51.8	49.2	48.2
Non-Caucasian	1,194	980	631	524	563	456	52.8	53.5	47.2	46.5

TABLE 14.—Births Classified by Sex, Race, and Nativity of Mothers, with Per cents by Sex, for Geographic Divisions: 1915 and 1914—Concluded.

Geographic division, and race or nativity of mother	Births						Per cent male		Per cent female	
	Total		Male		Female		1915	1914	1915	1914
	1915	1914	1915	1914	1915	1914				
Other counties	5,908	5,096	3,062	2,657	2,856	2,439	51.7	52.1	48.3	47.9
White	5,542	4,795	2,865	2,493	2,677	2,302	51.7	52.0	48.3	48.0
Born in California	1,200	965	640	514	560	471	53.7	52.2	46.3	47.8
Born in other states	3,013	2,687	1,571	1,367	1,442	1,320	52.1	50.9	47.9	49.1
Foreign born	1,320	1,123	645	612	675	511	48.9	54.5	51.1	45.5
Non-Caucasian	366	301	187	161	179	137	51.1	54.5	48.9	45.5
Northern and Central										
California	30,061	28,588	15,560	14,717	14,501	13,821	51.8	51.6	48.2	48.4
White	27,420	26,088	14,189	13,404	13,231	12,684	51.8	51.4	48.3	48.6
Born in California	11,124	10,419	5,718	5,311	5,406	5,108	51.4	51.0	48.6	49.0
Born in other states	7,659	7,440	3,944	3,787	3,715	3,653	51.5	50.9	48.5	49.1
Foreign born	8,637	8,229	4,523	4,306	4,114	3,923	52.4	52.3	47.6	47.7
Non-Caucasian	2,641	2,450	1,371	1,313	1,270	1,137	51.9	53.6	48.1	46.4
Coast counties	18,656	17,968	9,635	9,249	9,021	8,719	51.6	51.5	48.4	48.5
White	17,244	16,628	8,898	8,546	8,346	8,082	51.6	51.4	48.4	48.6
Born in California	7,206	6,772	3,722	3,462	3,484	3,310	51.7	51.1	48.3	48.9
Born in other states	3,826	3,792	1,955	1,920	1,871	1,872	51.1	50.6	48.9	49.4
Foreign born	6,212	6,064	3,217	3,164	2,995	2,900	51.8	52.2	48.2	47.8
Non-Caucasian	1,412	1,340	737	708	675	637	52.2	52.5	47.8	47.5
Interior counties	11,405	10,570	5,925	5,468	5,480	5,102	52.0	51.7	48.0	48.3
White	10,176	9,460	5,291	4,858	4,885	4,602	52.0	51.4	48.0	48.6
Born in California	3,918	3,647	1,996	1,849	1,922	1,798	50.9	50.7	49.1	49.3
Born in other states	3,833	3,648	1,989	1,867	1,844	1,781	51.9	51.2	48.1	48.8
Foreign born	2,425	2,165	1,306	1,142	1,119	1,023	53.9	52.7	46.1	47.3
Non-Caucasian	1,229	1,110	634	610	595	500	51.6	55.0	48.4	45.0
Metropolitan area	13,694	13,488	7,063	6,936	6,636	6,552	51.6	51.4	48.4	48.6
White	12,782	12,607	6,578	6,484	6,204	6,123	51.5	51.4	48.5	48.6
Born in California	5,081	4,921	2,611	2,510	2,473	2,411	51.4	51.0	48.6	49.0
Born in other states	2,780	2,806	1,410	1,433	1,370	1,373	50.7	51.1	49.3	48.9
Foreign born	4,918	4,880	2,563	2,541	2,365	2,339	51.9	52.1	48.1	47.9
Non-Caucasian	917	881	485	452	432	429	52.9	51.3	47.1	48.7
Rural counties	16,362	15,060	8,497	7,781	7,865	7,269	51.9	51.7	48.1	48.3
White	14,638	13,481	7,611	6,920	7,027	6,561	52.0	51.3	48.0	48.7
Born in California	6,040	5,498	3,107	2,801	2,933	2,697	51.4	50.9	48.6	49.1
Born in other states	4,870	4,634	2,534	2,354	2,345	2,280	51.9	50.8	48.1	49.2
Foreign born	3,719	3,349	1,970	1,765	1,749	1,584	53.0	52.7	47.0	47.7
Non-Caucasian	1,724	1,560	886	861	838	708	51.4	54.9	48.6	45.1

TABLE 15.—Births Classified by Sex, Race and Nativity of Mothers, with Per Cents by Sex, for Cities and Rest of State: 1915 and 1914.

Population group, and race or nativity of mother	Births						Per cent male		Per cent female	
	Total		Male		Female		1915	1914	1915	1914
	1915	1914	1915	1914	1915	1914				
California	48,075	46,012	24,772	23,792	23,303	22,220	51.5	51.7	48.5	48.3
White	43,874	42,281	22,583	21,791	21,291	20,490	51.5	51.5	48.5	48.5
Born in California	13,941	13,097	7,144	6,710	6,797	6,387	51.2	51.2	48.8	48.8
Born in other states	16,914	16,628	8,712	8,504	8,262	8,124	51.5	51.1	48.5	48.9
Foreign born	13,019	12,556	6,723	6,577	6,296	5,979	51.6	52.4	48.4	47.6
Non-Caucasian	4,201	3,731	2,189	2,001	2,012	1,730	52.1	53.6	47.9	46.4
Freeholders' charter cities	28,569	28,594	14,502	14,740	13,977	13,814	51.1	51.5	48.9	48.5
White	26,408	26,654	13,483	13,724	12,925	12,930	51.1	51.5	48.9	48.5
Born in California	8,093	7,924	4,196	4,078	3,987	3,866	50.7	51.2	49.3	48.8
Born in other states	9,928	10,185	5,024	5,211	4,804	4,974	51.1	51.2	48.9	48.8
Foreign born	8,487	8,545	4,349	4,455	4,138	4,090	51.2	52.1	48.8	47.9
Non-Caucasian	2,161	1,940	1,109	1,016	1,052	924	51.3	52.4	48.7	47.6
Rest of state	19,506	17,418	10,180	9,052	9,326	8,366	52.2	52.0	47.8	48.0
White	17,466	15,627	9,100	8,067	8,366	7,560	52.1	51.6	47.9	48.4
Born in California	5,848	5,173	3,038	2,652	2,810	2,521	51.9	51.3	48.1	48.7
Born in other states	7,066	6,443	3,688	3,293	3,398	3,150	56.0	51.1	48.0	48.9
Foreign born	4,532	4,011	2,374	2,122	2,158	1,889	52.4	52.9	47.6	47.1
Non-Caucasian	2,040	1,791	1,080	965	960	806	52.9	55.0	47.1	45.0

TABLE 16.—Births Classified by Number of Children Born to Mother, for Counties: 1915.

County	Total live births: 1915	Number of children born to mother, including birth reported										
		One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten or more	Unknown
California	48,075	17,860	11,718	6,741	4,153	2,510	1,533	1,015	642	414	631	1,368
Alameda	4,000	1,780	1,221	672	370	185	94	78	49	34	46	71
Alpine	4		1				1		1			
Amador	139	38	34	27	15	12	5	2	1		4	1
Butte	513	136	123	76	43	23	23	16	6	1	12	8
Calaveras	71	22	7	14	9	10	5	1	1		1	1
Colusa	140	36	43	16	15	11	2	7	3	1	2	4
Contra Costa	707	203	183	116	72	42	34	15	19	3	9	11
Del Norte	33	21	12	6	3	3	3	4	1			
El Dorado	102	30	23	17	13	7	7	5	2	3	1	
Fresno	1,083	685	456	277	181	123	78	40	46	14	42	39
Glenn	106	28	23	16	11	8	2	4	3	1	2	8
Humboldt	448	154	112	57	48	27	12	9	9	3	4	13
Imperial	421	132	96	63	46	27	21	7	6	4	11	8
Inyo	18	11	2	4								
Kern	685	213	188	83	60	42	25	14	13	7	13	27
Kings	350	118	82	55	37	19	13	7	5	2	3	9
Lake	82	26	23	11	9	3	1	4	2			3
Lassen	110	40	30	16	8	7	2	1	3		1	2
Los Angeles	12,106	4,577	2,985	1,584	950	554	323	216	150	92	165	513
Madera	197	55	43	30	22	10	10	6	5	2	6	8
Marin	271	91	76	40	24	11	13	3	2	2	3	6
Mariposa	81	6	10	8	1	3	3					
Mendocino	357	111	86	54	38	22	10	11	3	4	4	14
Merced	391	116	76	71	33	27	22	9	5	4	5	18
Modoc	110	36	25	17	9	9	6	4		1		3
Mono	1											
Monterey	360	113	91	45	32	13	20	10	4	3	7	22
Napa	207	81	44	33	15	12	6	4	3	2	2	5
Nevada	187	53	27	16	10	10	5	3	3	4	1	1
Orange	1,185	389	273	168	108	84	58	28	10	11	23	23

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Placer	374	106	100	69	35	25	14	6	7	2	4	7
Plumas	59	23	11	5	5	5	1	1	1	1	1	8
Riverdale	611	190	148	94	58	34	24	22	17	4	7	13
Sacramento	1,628	611	427	214	139	64	55	26	20	11	9	53
San Benito	213	68	50	36	22	14	7	7	1	2	1	5
San Bernardino	1,211	400	265	179	112	87	47	41	21	21	25	13
San Diego	1,472	554	368	189	115	82	55	30	13	15	8	28
San Francisco	7,024	3,038	1,896	989	600	343	207	146	70	63	79	218
San Joaquin	1,031	326	260	144	75	49	21	26	12	8	11	40
San Luis Obispo	313	87	71	63	32	21	12	8	5	6	8	
San Mateo	497	165	120	74	50	28	20	8	9	2	6	15
Santa Barbara	590	211	114	100	66	30	15	11	9	6	6	23
Santa Clara	1,673	567	387	255	147	103	65	48	34	23	25	19
Santa Cruz	475	163	127	82	43	21	13	6	8	3	4	10
Shasta	251	87	60	41	21	15	10	6	3	3	3	2
Sierra	38	9	10	7	5	5	1	1	1			
Slaskiyou	307	109	63	38	13	23	11	6	7	4	4	24
Solano	400	140	102	62	36	12	20	12	2	3	5	6
Sonoma	745	240	175	111	82	45	20	29	15	12	11	5
Stanislaus	616	212	134	82	65	46	29	13	11	10	9	5
Sutter	119	22	26	23	18	13	6	3	2	2	3	2
Tehama	166	53	39	23	17	15	5	1	4	2	6	1
Trinity	31	3	8	8	6	2	3	1				
Tulare	828	228	182	138	100	52	28	20	16	7	9	18
Tuolumne	51	15	12	11	3	6	2				1	1
Ventura	418	143	92	52	45	14	17	13	4	6	9	23
Yolo	240	59	66	42	26	16	10	9	1	2	4	5
Yuba	150	57	32	26	17	11	5	4	1	1	2	3

TABLE 17.—Births Classified by Number of Children Born to Mother, for Cities: 1916.

City	Total live births: 1916.	Number of children born to mother, including birth reported										
		One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten or more	Unknown
34 freeholders' charter cities	28,569	11,278	7,139	3,774	2,221	1,218	754	520	312	205	293	853
*Alameda County	371	122	91	53	40	26	15	10	2	4	7	4
Alameda	443	178	111	67	45	11	7	4	3	4	5	8
Berkeley	766	306	203	109	63	30	15	16	12	5	7	
Oakland	3,017	1,174	816	443	222	118	57	48	32	21	27	59
Contra Costa County	379	105	85	62	38	25	25	8	11	2	7	11
Richmond	328	96	96	54	34	17	9	7	8	1	2	
Fresno County	1,276	391	294	180	133	88	53	29	36	10	29	33
Fresno	707	294	164	97	48	35	25	11	10	4	13	6
Humboldt County	211	58	51	29	27	15	8	5	4	2	3	9
Eureka	237	96	61	28	21	12	4	4	5	1	1	4
Kern County	513	157	139	66	43	34	18	13	8	5	7	23
Bakersfield	172	56	49	17	17	8	7	1	5	2	6	4
Los Angeles County	2,746	847	609	412	256	178	96	61	55	37	54	78
Alhambra	44	8	10	9	7	3	1	1			2	3
Long Beach	416	174	120	61	36	13	12	5	7	4	5	9
Los Angeles	7,867	3,184	1,923	968	547	323	185	123	82	45	84	407
Pasadena	602	206	177	87	63	17	21	12	3	5	6	6
Pomona	201	77	38	31	24	9	7	3		1	1	10
Santa Monica	200	82	46	26	17	9	6	6	3		3	2
Marin County	164	56	46	22	14	7	9	3		1	3	4
San Rafael	107	36	30	18	10	4	4		2	1		2
Monterey County	204	65	41	29	15	8	11	7	3		5	20
Monterey	98	24	31	11	13	5	6	3	1	2	1	1
Salinas	58	24	19	5	4		3			1	1	1
Napa County	88	31	19	14	5	5	1	3	1	2	1	3
Napa	119	47	25	19	10	7	5	1	2		1	2
Nevada County	113	30	35	11	13	9	4	4	2	2		
Grass Valley	74	24	18	13	3	1	5	5	1	2	1	1
Riverside County	337	103	81	52	33	18	13	13	9	4	3	8
Riverside	274	87	67	42	23	16	11	9	8		4	5
Sacramento County	375	121	86	57	36	18	14	5	7	3	3	25
Sacramento	1,253	490	341	157	100	46	41	21	13	8	6	30
San Bernardino County	841	269	175	123	82	66	36	29	14	16	20	11
San Bernardino	370	131	90	56	30	21	11	12	7	5	5	2
San Diego County	454	137	112	56	51	37	26	13	6	10	4	2
San Diego	1,018	417	271	133	61	45	29	17	7	5	4	26
San Francisco (city and county)	7,621	3,098	1,826	969	600	318	207	146	70	63	79	218
San Joaquin County	477	150	120	71	41	31	10	12	6	7	7	22
Stockton	564	235	140	73	34	18	11	14	6	1	4	18
San Luis Obispo County	203	53	48	43	24	12	6	5	4	5	3	
San Luis Obispo	110	34	23	20	8	9	6	3	1	1	5	
Santa Barbara County	295	90	63	56	41	17	6	6	6	4	3	3
Santa Barbara	295	121	51	44	25	13	9	5	3	2	3	19
Santa Clara County	1,065	375	256	172	87	62	43	25	22	11	18	14
Palo Alto	48	19	7	9	2	5	2	1	1	1	1	
San Jose	560	193	121	74	58	36	20	22	11	11	6	5
Santa Cruz County	106	35	24	22	4	7	1	3	1	2	2	5
Santa Cruz	151	57	33	17	19	9	6	3	2	1	1	3
Watsonville	218	71	70	43	20	5	6				1	2
Solano County	211	68	47	33	23	7	15	9	1	1	2	5
Vallejo	189	72	55	29	13	5	5	3	1	2	3	1
Sonoma County	50	128	102	68	57	31	14	20	9	8	8	5
Petaluma	117	46	38	18	7	1	4	1	3			
Santa Rosa	178	66	35	25	18	13	2	8	4	4	3	
Stanislaus County	492	158	107	70	51	42	21	10	11	8	7	4
Modesto	124	54	27	12	14	4	5	3		2	2	1

*Figures shown for each county are for county exclusive of freeholders' charter city or cities.

III. STATISTICS OF DEATHS: 1915 AND 1914.

SYNOPSIS.

Causes of Death.—Diseases of the circulatory system (heart disease, etc.) constitute the principal group of causes of death in California, the per cent of total deaths for this group being 18.6 in 1915 and 17.0 in 1914 against the annual average of 15.9 for 1906 to 1915, and the death rates per 100,000 population being 254.0 and 231.5 as compared with the annual average of 221.2 for the ten-year period. The death rate for heart disease, etc., increased greatly through the ten years from only 185.1 for 1906 to 254.0 for 1915.

Tuberculosis, however, is the leading single cause of death in this state, causing about one-seventh of all deaths (14.2 per cent for both 1915 and 1914 against the average of 14.6 for 1906 to 1915). The tuberculosis death rate per 100,000 population was 194.5 in 1915 and 192.5 in 1914 against 204.0 for the last ten years. In contrast with the greatly increasing death rate for heart disease, etc., the death rate for tuberculosis decreased appreciably between 1906 and 1915 from 218.0 to 194.5.

Next after heart disease, etc., and tuberculosis come diseases of the respiratory system (pneumonia, etc.), diseases of the nervous system (meningitis, apoplexy, etc.), diseases of the digestive system (diarrhea, etc.), miscellaneous violence (besides suicide), cancer, Bright's disease and nephritis, and also epidemic diseases.

The death rates decreased generally between 1906 and 1915, though varying somewhat in the period, for diseases of the respiratory, nervous and digestive systems.

While death rates for miscellaneous violence remained nearly the same through the ten years, the death rates for suicide increased much since 1906, the former high rate for 1908 being surpassed greatly by that for 1915.

There were marked increases between 1906 and 1915 in the death rates for both cancer and Bright's disease, but on the other hand there were notable decreases during the decade in the death rates for various epidemic diseases.

Typhoid fever shows the most notable reduction in mortality. The deaths were successively as follows: 657 (1906), 558, 540, 461, 477, 444, 454, 436, 376, and 276 (1915). Similarly, the death rates decreased continuously between 1906 and 1915 thus: 32.3, 26.3, 24.4, 20.0, 19.9, 17.8, 17.6, 16.3, 13.6 and 9.7.

The steadily decreasing mortality from typhoid fever made diphtheria the leading epidemic disease in 1915, when deaths from diphtheria were exceptionally numerous.

Other notable epidemic diseases present in 1915 and 1914 were: Whooping cough, measles, influenza, malarial fever, and scarlet fever. Smallpox caused three deaths in 1915 against one in 1914, while plague caused a single death in 1915 but none the year before.

Geographic Divisions.—Analysis of causes of death in different localities reveals marked contrasts between the several geographic divisions in the relative prevalence of various diseases.

In the coast counties of both northern and central California, as well as in southern California outside Los Angeles, relatively high proportions of all deaths are due to diseases of the nervous system, the explanation being the presence of state hospitals in these three geographic divisions.

The interior counties of northern California show high proportions for miscellaneous deaths from violence, as drowning, railroad injuries, other accidents, etc.

In the interior counties of both northern and central California, and also in the counties south of Tehachapi other than Los Angeles, the proportions are relatively high for typhoid fever.

Each year large proportions of all deaths in San Francisco and the other bay counties were from heart disease, etc., as well as from pneumonia, while the metropolis leads especially also in the proportion of suicides among all decedents.

The proportion of deaths from tuberculosis was very high, indeed, each year in Los Angeles, as well as in the other counties of southern California, because of the heavy mortality among recent arrivals from eastern states.

Contrast between mortality in the metropolitan area and in the rural counties north of Tehachapi shows that the urban territory excels in deaths from heart disease, Bright's disease, cancer, pneumonia, digestive ailments (except diarrhea), and suicide, as well as from diphtheria and croup, while the country districts excel in deaths from diseases of the nervous system, infantile diarrhea, accidental violence and "old age," as well as typhoid fever, malarial fever, and scarlet fever.

Much the same contrast appears between mortality in chartered cities as a class and in all the rest of the state as a whole, the deaths from diarrhea and enteritis (under 2 years) being notably less within cities than outside them.

Analysis of mortality by months in the past five years indicates that the daily average number of deaths decreases generally from January to August while increasing regularly from September to December.

Tuberculosis.—The "great white plague" caused 5,551 deaths in 1915 and 5,320 in 1914, the per cent being 14.2 each year against the average of 14.6 for 1906 to 1915. The average per cent of total deaths from tuberculosis in the ten years last past was no less than 18.8 for southern California against only 12.6 for northern and central California together.

Among cities, the annual average per cent of tuberculosis deaths in the past five years was highest for San Bernardino, Bakersfield, Riverside, Los Angeles, Pasadena, Grass Valley, San Diego, and Stockton, all except Grass Valley, with many miners, and Stockton, with a state hospital, being in or near southern California. The per cent was relatively low for Palo Alto, Pomona, Santa Monica, Long Beach, Berkeley, Alhambra, Richmond, Santa Cruz, Petaluma, Santa Rosa, Vallejo, Alameda, Modesto, Napa, Salinas, and Oakland, all these cities except Pomona, Santa Monica, Long Beach, and Alhambra being north of Tehachapi.

Classification of deaths from tuberculosis by length of residence shows that north of Tehachapi many native Californians and old-time residents succumb to this disease. The annual average per cent of

native Californians among tuberculosis victims in 1906 to 1915 was 38.1 for northern and central California together against only 15.4 for southern California, being 28.7 for the entire state. Similarly, the average per cent who had lived here at least ten years was 29.9 for the territory north of Tehachapi as compared with only 20.5 for that to the south, being 26.0 for the state as a whole.

South of Tehachapi, on the other hand, deaths from tuberculosis occur largely among newly arrived consumptives. The annual average per cent of tuberculosis victims who had lived in the state less than ten years was as great as 55.5 for southern California against merely 18.4 for the territory north of Tehachapi and 33.8 for the whole state. Moreover, the length of residence in California was less than a year for an average of 17.0 per cent of the tuberculosis victims south of Tehachapi, the corresponding per cent for the entire state being only 9.2. In fact, of all who died of tuberculosis in southern California, an average of 2.0 per cent had been in the state less than a month, 6.4 per cent less than three months, and altogether 11.2 per cent less than half a year.

Among tuberculosis victims in cities, the average per cents for residents of less than ten years' standing in 1911 to 1915 were as follows: Pasadena, 64.4; San Diego, 58.9; Los Angeles, 55.7; Riverside, 55.0; and San Bernardino, 52.4. Moreover, the average per cents for residents of less than a single year's standing were thus: San Diego, 20.2; Pasadena, 18.1; San Bernardino, 15.3; Riverside, 15.2; and Los Angeles, 13.3.

Data for 1915 and 1914 on length of residence for all causes of death show that in southern California, where between one-fifth and one-sixth of all deaths are due to tuberculosis, the proportion for this disease is fully one-fourth among all decedents who had lived in the state less than a year and over one-fifth among those who had been here only one to nine years.

Figures for 1911 to 1915 indicate that the months of greatest mortality from tuberculosis for California as a whole are February, March, April and May, while deaths from this disease are relatively least numerous in August, September, October and November.

In short, the death rate of California is evidently swollen considerably by deaths occurring here from disease contracted elsewhere, for where tuberculosis is most prevalent a large proportion of the victims are residents of very short standing. Moreover, infection from these newly arrived consumptives accounts for some of the deaths among native Californians and old-time residents.

Sex.—Of 39,026 decedents in 1915, the males were 23,871 and the females 15,155, while among the 37,537 in 1914 the males were 23,038 and the females 14,499. The per cent male was 61.2 in 1915 and 61.4 in 1914 against the average of 62.0 for 1906 to 1915, the proportion of males among decedents having decreased somewhat since 1906, especially in the most recent years. In both 1915 and 1914 the per cent male was highest for northern California and next for central California.

The per cents male were above the general average for deaths from suicide, other violence, typhoid fever, pulmonary tuberculosis, Bright's disease, and heart disease, etc. The female decedents exceeded or

nearly equalled the males each year only for whooping cough, cancer, diphtheria, measles, scarlet fever, and influenza.

Race.—In 1915 the white decedents numbered 36,890; the Chinese, 751; the Japanese, 663; the negroes, 583; and the Indians, 139. The figures for 1914 were: White, 35,513; Chinese, 657; Japanese, 628; negro, 569; and Indian, 170. The per cent white was 94.5 in 1915 and 94.6 in 1914, or about the same as the average of 94.6 for the last ten years, the proportion of Caucasians among decedents having varied only slightly since 1906. In both 1915 and 1914 the per cent white was highest for southern California.

The per cents white were very high indeed for deaths from diphtheria, cancer, diseases of the nervous and circulatory systems, scarlet fever, measles, and Bright's disease.

The proportions of Caucasians among all decedents was low each year for typhoid fever, which causes many deaths of Japanese, and for tuberculosis, which kills many Chinese and negroes.

Nativity.—Of the white decedents in 1915 and 1914 those born in other states were 14,905 and 13,952; the foreign born were 11,761 and 11,177; those born in California were 9,235 and 9,412; and the nativity was unknown for 989 and 972. The per cent distribution of white decedents in 1915 and 1914, respectively, was: Other states, 40.4 and 39.3; foreign countries, 31.9 and 31.5; California, 25.0 and 26.5; and unknown, 2.7 each year. For 1906 to 1915, moreover, the annual average per cents were: Other American, 37.7; foreign, 31.8; Californian, 27.3; and unknown, 3.2.

Between 1906 and 1915 the proportion of other Americans among white decedents increased considerably, the proportion foreign born remained quite stationary, and the proportion of native Californians decreased somewhat.

The proportion born elsewhere in the United States is very high for southern California, especially Los Angeles. The proportion foreign born is notably great only for central California, especially for San Francisco and the other bay counties. The proportion of native Californians among decedents was greatest each year in central California, and next in northern California.

The proportion of native Californians is especially great for deaths from early infancy, diarrhea and enteritis, whooping cough, measles, diphtheria, scarlet fever, meningitis, tuberculosis other than pulmonary, typhoid fever, malarial fever, pneumonia, and childbirth.

The per cents born in other states were above the general averages for deaths from influenza, diseases of the nervous system other than meningitis, cancer, Bright's disease, diseases of the circulatory system, pulmonary tuberculosis, diarrhea (two years and over) and other diseases of the digestive system, and general diseases other than tuberculosis and cancer (*i. e.* diabetes, alcoholism, etc.)

The proportions foreign born were above the general averages for deaths from heart disease, etc., cancer, Bright's disease, suicide and other violence, childbirth, and diseases of the respiratory, nervous and digestive systems except pneumonia, meningitis and diarrhea, respectively.

Age Periods.—The deaths in 1915 and 1914, respectively, were distributed by age periods as follows: Under 1 year, 3,570 and 3,964; 1 to 4 years, 1,510 and 1,628; 5 to 14 years, 1,089 and 1,081; 15 to 24 years, 2,144 and 2,125; 25 to 34 years, 3,759 and 3,770; 35 to 44 years, 4,265 to 4,249; 45 to 54 years, 4,777 and 4,579; 55 to 64 years, 5,471 and 5,019; and 65 years and over, 12,441 and 11,122.

The corresponding per cents for 1915 and 1914 were: Under 1 year, 9.2 and 10.6; 1 to 4 years, 3.9 and 4.3; 5 to 14 years, 2.8 and 2.9; 15 to 24 years, 5.5 and 5.7; 25 to 34 years, 9.6 and 10.0; 35 to 44 years, 10.9 and 11.3; 45 to 54 years, 12.2 each year; 55 to 64 years, 14.0 and 13.4; and 65 years and over, 31.9 and 29.6. Moreover, the annual average per cent distribution for 1911 to 1915 was: Under 1, 10.4; 1 to 4, 4.2; 5 to 14, 2.8; 15 to 24, 5.9; 25 to 34, 9.9; 35 to 44, 11.2; 45 to 54, 12.1; 55 to 64, 13.3; 65 years and over, 30.2.

Comparison of per cents by five age periods since 1906 and by nine since 1911 shows that there have been marked decreases in the proportion of deaths occurring in infancy, childhood, youth, and successive productive ages to 44, that the proportion is stationary for deaths at 45 to 54 years, and that there have been notable increases in the proportion of total deaths at 55 to 64 years and at 65 years and over.

Median Age.—The median age of California decedents, half being younger and half older, was 51.8 years in 1915 against 49.6 in 1914, 49.4 in 1913, 49.2 in 1912, and 48.8 in 1911. Every year Californians live longer, the median age at death having advanced three years between 1911 and 1915. The advance was particularly great from 1914 to 1915 and appeared for every geographic division in the state and for about all of the leading causes of death.

In both 1915 and 1914 the median age was highest by far for northern California, 56.3 and 55.8, and was slightly higher for central California, 51.4 and 49.4, than for the territory south of Tehachapi, 51.2 and 47.8.

The median ages were 50.3 and 48.3 for San Francisco and 50.1 and 46.5 for Los Angeles City in 1915 and 1914, respectively.

Each year the median age was notably low for typhoid fever, 28.6 and 28.7; tuberculosis, 34.9 and 34.7; miscellaneous violence, 37.5 and 36.6; suicide, 44.3 and 41.8; as well as digestive ailments including diarrhea, 37.9 and 36.4.

On the other hand, the median ages in 1915 and 1914 were relatively high for other causes as follows: Respiratory system (pneumonia, etc.), 55.9 and 47.6; cancer, 61.3 and 60.4; nervous system (apoplexy, etc.), 61.9 and 61.4; Bright's disease, 63.0 and 62.3; and circulatory system (heart disease, etc.), 68.0 and 67.0.

The median age was practically the same for each sex in 1915, though considerably higher for men than for women in 1914.

Marital Condition of Decedents.—Exclusive of children under 15, the classification of male decedents totaling 20,394 and 19,315 in 1915 and 1914 was: Single, 6,408 and 6,082; married, 9,275 and 8,750; widowed, 3,049 and 2,800; divorced, 376 and 347; and unknown, 1,286 and 1,336. The marital condition of females aged 15 and over totaling 12,463 and 11,549 was: Single 1,492 and 1,375; married, 5,824 and 5,627; widowed, 4,872 and 4,255; divorced, 172 and 154; and unknown, 103 and 138.

The annual average per cents for 1913 to 1915 were: Single—males, 31.8, but females, 12.1; married—males, 45.0 and females, 47.8; widowed—males, 14.8, but females, 37.7; divorced—males, 1.7 and females, 1.3; and unknown—males, 6.7, but females, 1.1. Male decedents exceed in the per cent single, and females in the per cent widowed, the proportion married being about the same for each sex.

Among men the per cent single was much greater, and the per cent married much less, for the territory north of Tehachapi than for that to the south, somewhat similar contrasts appearing among women but in only slight degree. Southern California excels in the proportion of widowers and northern and central California in the proportion of widows among decedents.

The per cents single, among both men and women, were above general averages for deaths from tuberculosis, typhoid fever, suicide and other violence.

The proportion married was high among men for cancer, nervous diseases, Bright's disease, digestive ailments, heart disease, etc., and among women for typhoid fever, tuberculosis, suicide, miscellaneous causes, cancer, digestive ailments, and Bright's disease.

In general, the per cents for both widowers and widows were particularly great for heart disease, etc., Bright's disease, nervous diseases, and respiratory troubles.

Occupations and Causes of Death.—Of the decedents aged 15 years and over for whom occupations were reported, totaling 18,778 in 1915 and 17,859 in 1914, the males numbered 17,600 and 16,673, while the females were only 1,178 and 1,186, the per cents male being 93.7 and 93.4 and female merely 6.3 and 6.6.

The per cents of deaths from typhoid fever were notably high among men in the following specific occupations: Butchers, plumbers, sailors, clerks, machinists, common laborers, farmers and brick masons. The proportions were also high for nurses among women workers.

Tuberculosis caused relatively more deaths among both men and women workers than among men without occupation or women with only home duties. The per cents of deaths from tuberculosis were particularly high for the following occupations of men: Barbers, waiters, clerks, engineers and surveyors, tailors, plumbers, musicians, common laborers, architects, draymen, iron and steel workers, saloon keepers, miners, cabinet makers, printers, and stationary engineers. The proportions were also relatively high for clerks among women wage earners. On the other hand, the proportions of deaths from tuberculosis were very low indeed for policemen, clergymen, lawyers, bankers, farmers, stock raisers, merchants, physicians, hotel keepers, florists, lumbermen, soldiers, and blacksmiths.

Miscellaneous violence, like tuberculosis, caused relatively more deaths among both men and women reporting gainful occupations than among those without wage-earning employments. The per cents of deaths from accidents were especially high among men in the following occupations: Lumbermen, railroad employees, hucksters, sailors, draymen, policemen, common laborers, soldiers, stationary engineers, machinists, engineers and surveyors, and miners. However, the proportions of deaths from violence were remarkably small among clergymen, lawyers, printers.

bankers, architects, brick masons, butchers, boot and shoe makers, merchants, clerks, barbers, saloon keepers, and musicians.

The statistics show varying relations between occupations and causes of deaths for persons in different specific occupations dying from cancer, diseases of the circulatory system, Bright's disease, diseases of the nervous, respiratory and digestive systems, and from suicide.

CAUSES OF DEATH.

The State.—Table 1, on pages 252-253, gives the number of deaths in California from certain principal causes, as well as the proportion per 1,000 total deaths and also the death rate per 100,000 estimated midyear population, for each year in the ten-year period just ended. The table also presents annual average proportions and rates for the ten years, 1906 to 1915.

TABLE 1.—Deaths from Certain Principal Causes, with Proportion per 100,000 Total Deaths and Death Rate per 100,000 Population for California: 1906 to 1915.

Cause of death	Deaths										Proportion per 1,000 total deaths					
	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	Annual average 1906 to 1915	1915	1914	1913	1912	1911
All causes	31,028	37,337	38,549	38,709	34,012	32,398	30,985	31,287	31,005	29,308	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	276	376	436	454	444	477	461	540	558	657	14.1	7.1	10.0	11.3	12.4	13.0
Malarial fever	45	70	77	101	121	113	112	80	70	111	2.7	1.1	1.9	2.0	2.7	3.5
Smallpox	3	1	15	16	9	1	6	9	6	36	0.3	0.1	0.4	0.4	0.4	0.3
Measles	132	133	154	134	84	169	119	101	189	169	4.3	3.4	4.1	4.0	3.6	2.5
Scarlet fever	53	90	85	34	81	69	69	104	72	52	2.1	1.4	2.4	2.2	0.9	2.4
Whooping-cough	124	396	128	193	177	307	217	149	173	122	5.6	3.2	8.2	3.3	5.3	5.2
Diphtheria and croup	310	268	186	138	167	218	218	391	380	244	7.7	7.9	7.1	4.8	4.3	4.9
Influenza	181	138	220	146	125	73	82	125	114	106	4.1	4.6	3.7	5.7	4.0	3.7
Plague	1		2		1	1	1	5	82		0.3					
Other epidemic diseases	116	132	140	186	169	204	108	136	121	174	4.5	3.0	3.5	4.7	5.1	5.0
Tuberculosis of lungs	4,752	4,529	4,536	4,316	4,353	4,161	4,061	3,945	4,040	3,861	125.3	121.8	120.6	117.5	117.6	128.0
Tuberculosis of other organs	789	791	846	812	761	711	612	620	567	576	20.8	20.5	21.1	22.4	22.1	22.4
Cancer	2,776	2,687	2,565	2,306	2,029	1,984	1,945	1,737	1,540	1,502	61.3	71.1	71.6	66.4	62.8	59.6
Other general diseases	1,645	1,591	1,733	1,621	1,538	1,367	1,177	1,186	1,095	1,016	40.6	42.1	42.4	44.9	44.2	45.2
Meningitis	273	331	406	376	381	369	368	571	687	466	12.5	7.0	8.8	10.5	8.4	11.2
Other diseases of nervous system	1,351	3,239	3,315	2,959	2,766	2,632	2,479	2,422	2,408	2,297	81.0	80.7	86.3	85.9	80.6	82.2
Diseases of circulatory system	7,251	6,397	6,281	6,376	5,516	5,087	4,966	4,540	4,362	3,765	136.6	135.8	170.4	162.7	173.7	162.2
Pneumonia and broncho-pneumonia	3,063	2,677	2,938	2,968	2,672	2,438	2,081	2,421	2,678	2,431	77.4	78.5	71.3	76.1	80.9	78.6
Other diseases of respiratory system	728	786	868	872	802	775	842	861	910	756	24.8	18.7	20.9	22.5	23.7	23.6
Diarrhea and enteritis, under 2 years	795	880	1,270	1,056	1,016	1,029	966	922	840	980	28.9	20.4	23.7	32.9	28.8	29.9
Diarrhea and enteritis, 2 years and over	415	352	360	359	307	288	270	243	296	338	9.4	10.6	9.4	9.6	9.8	9.0
Other diseases of digestive system	1,949	1,532	1,906	1,980	1,766	1,633	1,566	1,646	1,588	1,410	51.3	49.9	51.5	51.7	53.9	51.9
Bright's disease and nephritis	2,664	2,446	2,392	2,185	2,064	1,858	1,858	1,797	1,787	1,622	61.3	68.8	66.2	62.0	59.5	64.2
Childbirth	356	344	396	363	355	306	300	339	395	396	9.6	9.1	9.2	10.2	9.9	10.4
Diseases of early infancy	1,478	1,454	1,444	1,390	1,106	1,129	928	1,108	1,081	946	35.4	37.9	38.7	37.4	37.3	34.3
Suicide	1,085	912	887	808	752	706	702	757	608	501	22.2	26.5	24.3	21.7	21.9	22.1
Earthquake and fire										750	2.6					
Other violence	3,110	3,076	3,133	2,962	2,686	2,486	2,568	2,569	2,711	2,152	80.4	79.7	81.9	81.2	80.4	79.0
All other causes	1,525	1,570	1,774	1,682	1,553	1,616	1,748	1,973	1,851	1,966	51.4	39.1	41.8	46.0	45.8	43.7

TABLE 1.—Deaths from Certain Principal Causes, with Proportion per 100,000 Total Deaths and Death Rate per 100,000 Population in California: 1906 to 1915—Concluded.

Cause of death	Proportion per 1,000 total deaths					Death rate per 100,000 population										
	1910	1909	1908	1907	1906	Annual average 1906 to 1915	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906
	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0		1,867.1	1,858.5	1,444.8	1,422.9	1,866.9	1,351.8	1,343.7	1,412.1	1,463.1	1,440.0
All causes	14.7	14.9	17.3	17.9	22.4	18.8	9.7	13.6	16.3	17.6	17.8	19.9	20.0	24.4	24.3	32.3
Typhoid fever	3.5	3.6	2.6	2.2	3.8	3.8	1.6	2.5	2.9	3.9	4.9	4.7	4.9	8.6	3.3	3.5
Malarial fever	•	0.2	0.3	0.2	1.2	0.5	0.1	†	0.6	0.6	0.4	0.1	0.3	0.4	0.3	1.8
Smallpox	6.2	3.8	3.2	6.1	5.8	6.0	4.6	5.5	5.8	5.2	3.4	8.3	5.2	4.6	8.9	8.3
Measles	2.1	2.2	3.3	1.8	3.0	1.9	3.3	3.3	3.2	1.3	3.3	2.9	3.0	4.7	3.4	2.6
Whooping-cough	9.5	7.0	4.8	5.6	4.2	7.8	4.3	11.1	4.8	7.5	7.1	12.8	9.4	6.7	8.1	6.0
Diphtheria and croup	6.7	8.0	12.5	12.2	8.3	10.8	10.9	9.7	7.0	6.1	6.7	9.1	10.8	17.6	17.9	12.0
Influenza	2.3	2.6	4.0	3.7	6.7	5.7	6.3	5.0	8.2	5.6	5.0	3.1	3.6	5.6	5.4	9.6
Plague	•	•	0.2	2.6	•	0.4	†	•	0.1	•	0.1	0.1	0.1	0.2	3.8	•
Other epidemic diseases	6.3	3.5	4.0	3.9	5.9	6.3	4.1	4.3	6.7	7.2	6.8	8.5	4.7	5.7	5.7	8.6
Tuberculosis of lungs	128.4	131.0	126.1	129.9	131.7	175.0	166.5	163.9	169.8	167.3	174.9	173.6	176.1	178.1	190.1	189.7
Tuberculosis of other organs	21.9	19.8	19.8	18.2	19.7	29.0	28.0	28.6	32.4	31.5	30.6	29.7	29.5	28.0	26.7	28.3
Cancer	61.2	62.8	55.5	51.1	51.3	85.6	97.2	97.3	96.0	99.4	81.5	82.8	84.3	78.4	74.8	73.8
Other general diseases	41.9	39.0	37.9	35.2	34.7	56.7	57.6	57.6	61.9	62.8	61.8	56.6	51.0	53.5	51.5	49.9
Menigitis	11.4	12.8	18.2	21.1	15.9	17.6	9.6	12.0	13.1	11.9	15.3	15.4	17.3	25.8	30.9	22.9
Other diseases of nervous system	81.2	80.0	77.1	77.3	78.4	113.1	110.4	117.2	124.1	114.7	112.4	108.8	107.5	109.3	113.1	112.9
Diseases of circulatory system	167.0	160.3	145.1	140.3	138.5	221.2	254.0	231.5	235.1	247.2	221.7	212.2	215.3	204.9	205.2	185.1
Pneumonia and broncho-pneumonia	75.3	67.2	77.4	86.1	83.0	108.3	107.3	96.9	110.0	115.1	107.4	101.7	90.2	106.3	126.0	119.5
Other diseases of respiratory system	23.9	27.2	27.5	29.3	25.8	34.0	25.5	28.5	32.5	33.8	32.2	32.3	36.5	38.9	42.8	37.1
Diarrhea and enteritis, under 2 years	31.8	31.2	29.5	28.9	31.7	40.4	27.8	32.2	47.5	40.9	40.8	42.9	41.9	41.6	42.3	45.7
Diarrhea and enteritis, 2 years and over	8.7	8.7	7.8	9.3	11.5	13.2	14.5	12.7	13.8	13.9	12.3	11.8	11.7	11.0	13.5	16.6
Other diseases of digestive system	50.4	51.5	52.6	51.1	48.1	71.6	68.3	66.9	74.7	76.8	71.0	68.1	69.2	74.3	74.7	69.3
Bright's disease and nephritis	62.8	60.0	57.4	57.5	35.4	85.5	94.0	88.5	90.5	84.7	87.8	84.9	80.6	81.1	84.1	79.7
Childbirth	9.5	9.7	10.8	8.5	9.1	13.5	12.5	12.5	14.8	14.1	14.3	12.8	13.0	15.3	12.5	13.1
Diseases of early infancy	34.9	32.2	35.4	33.2	32.3	49.4	51.8	52.6	54.0	56.1	46.9	47.1	48.3	50.0	46.5	46.5
Suicide	21.8	22.7	24.2	19.6	17.1	30.9	36.3	33.0	31.3	31.1	30.2	29.5	30.4	34.2	28.6	24.8
Earthquake and fire	76.7	82.7	82.1	87.2	73.4	112.4	108.9	111.3	117.3	114.4	107.9	108.7	111.1	115.9	127.6	105.7
Other violence	49.9	56.4	63.1	59.5	66.7	71.9	53.4	56.8	66.4	65.2	62.4	67.4	75.8	80.0	87.1	96.0
All other causes	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

*Less than one-tenth of 1 per thousand. †Less than one-tenth of 1 per 100,000.

Table 1 shows that diseases of the circulatory system, heart disease, etc., constitute the principal group of causes of death in California. Diseases of the circulatory system caused 18.6 per cent of all deaths in 1915 and 17.0 per cent in 1914, against the annual average of 15.9 for 1906 to 1915. The death rates per 100,000 population for this class of diseases were 254.0 and 231.5 in 1915 and 1914, respectively, as compared with the annual average of 221.2 for the whole ten-year period. In fact, the death rate for heart disease, etc., increased greatly through the ten years thus: 185.1 (1906), 205.2, 204.9, 215.3, 212.2, 221.7, 247.2, 235.1, 231.5, and 254.0 (1915).

Tuberculosis, however, is the leading single cause of death in California. Each year about one-seventh of all deaths in the state were due to this disease, the per cent being 14.2 for both 1915 and 1914 against the average of 14.6 for 1906 to 1915. In 1915, 12.2 per cent of all deaths were from tuberculosis of the lungs and 2.0 per cent from tuberculosis of other organs, while for 1914 the corresponding figures were 12.1 and 2.1. The death rate per 100,000 population for all forms of tuberculosis was 194.5 in 1915 and 192.5 in 1914, against the average of 204.0 for the last ten years. In contrast with the great increase in death rates for diseases of the circulatory system between 1906 and 1915, there was an appreciable decrease in the death rates for tuberculosis of all forms during the same period as follows: 218.0 (1906), 216.8, 206.1, 202.6, 203.3, 205.5, 198.8, 202.2, 192.5, and 194.5 (1915).

Next after diseases of the circulatory system and various forms of tuberculosis taken together come diseases of the respiratory system, pneumonia, etc. Diseases of this class caused 9.7 per cent of all deaths in 1915 and 9.2 per cent in 1914, as compared with the average of 10.2 per cent for 1906 to 1915. Pneumonia and broncho-pneumonia caused 7.8 per cent of all deaths in 1915 and 7.1 per cent in 1914, while other diseases of the respiratory system caused 1.9 and 2.1 per cent, respectively. The death rate per 100,000 population for all diseases of the respiratory system was 132.8 in 1915 and 125.4 in 1914 against the average of 142.3 for 1906 to 1915. The death rate for diseases of the respiratory system decreased in the main, while varying somewhat irregularly in the ten years thus: 156.6 (1906), 168.8, 148.2, 126.7, 134.0, 139.6, 148.9, 142.5, 125.4, and 132.8 (1915).

For meningitis and other diseases of the nervous system in 1915 and 1914, respectively, the per cents of deaths were 8.8 and 9.5 against the ten-year average of 9.4, meningitis causing 0.7 per cent of all deaths in 1915 and 0.9 per cent in 1914 against the average of 1.3 per cent. The death rate per 100,000 population for all diseases of the nervous system was 120.0 in 1915 and 129.2 in 1914, against the average of 130.7 for the ten-year period. The successive death rates were as follows from 1906 to 1915: 135.8, 144.0, 135.1, 124.8, 125.2, 127.7, 126.6, 139.2, 129.2, and 120.0.

Diseases of the digestive system (diarrhea and enteritis, etc.) caused 8.1 per cent of all deaths in 1915 and 8.5 per cent in 1914 against the ten-year average of 9.0. The deaths from diarrhea and enteritis among children under two years of age were 2.0 per cent of the total deaths

at all ages in 1915 and 2.4 per cent in 1914 against the average of 2.9 per cent. The death rate per 100,000 population for diarrhea and other diseases of the digestive system was 110.6 in 1915 and 114.8 in 1914 against the average of 125.2 for the whole decade. Between 1906 and 1914 the death rates for all diseases of the digestive system were successively as follows: 131.6, 130.5, 126.9, 122.8, 122.8 again, 124.1, 131.6, 136.0, 114.8, and 110.6.

Miscellaneous violence exclusive of suicide was the cause for 8.0 per cent of all deaths in 1915 and 8.2 per cent in 1914, against the ten-year average of 8.0 (exclusive of 0.3 for deaths from earthquake and fire in 1906). The death rate per 100,000 population for miscellaneous violence (drowning, automobile accidents, railroad injuries, etc.) was 108.9 in 1915 and 111.3 in 1914 against the annual average of 112.4 for the ten-year period. The death rate per 100,000 population of 36.9 for earthquake and fire in 1906 represents an additional average of 3.7 for the whole decade. Exclusive of deaths from this exceptional cause all in a single year, the death rates per 100,000 population ranged as follows for miscellaneous violence: 105.7 (1906), 127.6, 115.9, 111.1, 103.7, 107.9, 114.4, 117.3, 111.3, and 108.9 (1915).

Suicide was the cause for 2.7 per cent of all deaths in 1915 and 2.4 per cent in 1914, against the ten-year average of 2.2, while the death rates per 100,000 population were 36.3 and 33.0, against the average of 30.9. A growing tendency toward self-destruction is indicated by the successive death rates per 100,000 population for suicide from 1906 to 1915, as follows: 24.6, 28.6, 34.2, 30.4, 29.5, 30.2, 31.1, 31.3, 33.0, and 36.3. The former high death rate of 34.2 for suicides in 1908 is surpassed greatly by the suicide death rate of 36.3 for 1915.

Cancers of various kinds caused 7.1 per cent of all deaths in 1915 and 7.2 per cent in 1914, against the ten-year average of 6.1, while the death rates per 100,000 population were 97.2 and 97.3 against the average of 85.6. The death rate for cancer increased greatly between 1906 and 1915 thus: 73.8, 74.8, 78.4, 84.3, 82.8, 81.5, 89.4, 96.0, 97.3, and 97.2.

Bright's disease and nephritis caused 6.9 per cent of all deaths in 1915 and 6.5 per cent in 1914 against the ten-year average of 6.1, while the death rates per 100,000 population were 94.0 and 88.5 against the average of 85.5. Corresponding to the increase in the death rate for cancer there has also been a great increase in the death rate for Bright's disease and nephritis as follows: 79.7 (1906), 84.1, 81.1, 80.6, 84.9, 87.8, 84.7, 89.5, 88.5, and 94.0 (1915).

In contrast with the marked increases in death rates for both cancer and Bright's disease, there were notable decreases in death rates for various epidemic diseases, between 1906 and 1915, these decreases being shown both for all epidemic diseases taken together and for a group of the principal epidemic diseases specially selected. For all epidemic diseases together (including even influenza, plague, and sundry minor epidemic diseases) the annual average rate for 1906 to 1915 was 64.1 and the successive yearly rates were as follows: 86.7, 83.1, 73.5, 62.0,

69.5, 55.5, 55.0, 55.6, 55.5, and 43.5. For a special selected group of the principal epidemic diseases (including only typhoid fever, malarial fever, smallpox, measles, scarlet fever, whooping cough and diphtheria and croup) the average annual rate for the ten-year period was 51.7 and the yearly rates ranged successively thus: 68.5 (1906), 68.2, 62.0, 53.6, 57.8, 43.6, 42.2, 40.6, 45.7, and 33.1 (1915).

Typhoid fever has been by far the most fatal of the epidemic diseases in California, though surpassed by diphtheria in total deaths for 1915 alone. However, the death total for typhoid fever decreased quite steadily throughout the ten years last past as follows: 657 (1906), 558, 540, 461, 477, 444, 454, 436, 376, and 276 (1915). The per cent of total deaths from typhoid fever, averaging 1.4 (14.1 per 1,000) for the ten years, ranged downward continuously between 1906 and 1915 thus: 2.2, 1.8, 1.7, 1.5, 1.5 again, 1.3, 1.2, 1.1, 1.0, and 0.7. Similarly, the death rate per 100,000 population, averaging 19.8 for the whole decade, was less each succeeding year as follows: 32.3 (1906), 26.3, 24.4, 20.0, 19.9, 17.8, 17.6, 16.3, 13.6, and 9.7 (1915). In the ten-year period the death total for typhoid fever fell from 657 in 1906 to only 276 in 1915, a drop of 381 or 58.0 per cent or almost three-fifths. The typhoid fever death total last year was thus only about two-fifths of the total ten years before. With deaths from other causes increasing, the per cent of total deaths due to typhoid fever fell between 1906 and 1915 from 2.2 to 0.7 (or from 22.4 to 7.1 per 1,000), so that the proportion for 1915 was only one-third of that for 1906. Moreover, with total population increasing even faster than total deaths, the death rate for typhoid fever per 100,000 inhabitants fell from 32.3 in 1906 to only 9.7 for 1915. The typhoid fever death rate last year was thus only about one-fourth as great as the corresponding rate ten years previously.

For diphtheria and croup the death totals ranged irregularly between 1906 and 1915 as follows: 244, 380, 391, 248, 218, 167, 158, 186, 268, and 310. The death rates per 100,000 population for diphtheria and croup, averaging 10.8 for the ten-year period, likewise varied greatly thus: 12.0 (1906), 17.9, 17.6, 10.8, 9.1, 6.7, 6.1, 7.0, 9.7, and 10.9 (1915).

The death totals for whooping cough ranged up and down in the ten years thus: 122 (1906), 173, 149, 217, 307, 177, 193, 128, 306, and 124 (1915). The whooping cough death rates, averaging 7.8 for the whole decade, also varied considerably as follows from 1906 to 1915: 6.0, 8.1, 6.7, 9.4, 12.8, 7.1, 7.5, 4.8, 11.1, and 4.3.

The deaths from measles varied somewhat, though within a narrow range as follows: 169 (1906), 189, 101, 119, 199, 84, 134, 154, 153, and 132 (1915). The death rates for measles, averaging 6.0 for the ten-year period, were as follows in succeeding years from 1906 to 1915: 8.3, 8.9, 4.6, 5.2, 8.3, 3.4, 5.2, 5.8, 5.5, and 4.6.

The deaths from malarial fever decreased greatly between 1906 and 1915 thus: 111, 70, 80, 112, 113, 121, 101, 77, 70, and 45. The death rates for malarial fever, averaging 3.8 for the whole decade, likewise declined sharply as follows: 5.5 (1906), 3.3, 3.6, 4.9, 4.7, 4.9, 3.9, 2.9, 2.5, and 1.6 (1915).

The deaths from scarlet fever ranged as follows within narrow limits: 52 (1906), 72, 104, 69, 69 again, 81, 34, 85, 90, and 53 (1915). The death rates for scarlet fever, averaging 3.0 for the whole period, were as follows in successive years between 1906 and 1915: 2.6, 3.4, 4.7, 3.0, 2.9, 3.3, 1.3, 3.2, 3.3, and 1.9.

In 1915 and 1914, respectively, the deaths from influenza totaled 181 and 138 as compared with 220 for 1913 and 146 for 1912, the totals having been even less for all earlier years except only 1906 (196). The annual average death rate for influenza in 1906 to 1915 was 5.7 per 100,000 population, the rate being 6.3 for 1915 and 5.0 for 1914, as compared with 8.2 for 1913 and 5.6 for 1912, and the maximum rate in any year having been that of 9.6 for 1906.

There were three deaths from smallpox in 1915 and a lone one in 1914 in contrast with 15 in 1913 and 16 in 1912. There was also one death from plague in 1915 but none in 1914 as compared with two in 1913 and none in 1912.

Main Geographic Divisions.—Table 2, which follows, gives for the three main geographic divisions in 1915 and 1914 the number of deaths from certain principal causes, as well as the proportion from each cause per 1,000 total deaths. The death rates per 100,000 population are not shown for geographic divisions, because of the difficulty of estimating population for different localities with sufficiently equal accuracy to justify the comparison of detailed death rates for individual causes of death.

Table 2 shows that the proportions per 1,000 total deaths for typhoid fever were relatively high each year for northern California (10.2 and 11.6) and for central California (7.8 and 10.7) in comparison with the state averages of 7.1 and 10.0 for 1915 and 1914, respectively.

The proportions were also above the state averages both years for central California for deaths from diphtheria and croup (9.5 and 8.6 against averages of 7.9 and 7.1) and from whooping cough (3.4 and 10.6 against 3.2 and 8.2).

The proportion was likewise above the state average each year for northern California for whooping cough (4.9 and 8.6 against averages of 3.2 and 8.2; measles in general (6.1 and 3.5 against 3.4 and 4.1); influenza (9.0 and 5.8 against 4.6 and 3.7); and malarial fever (4.4 and 6.8 against 1.1 and 1.9).

The proportion of total deaths in southern California was not specially great for any of the epidemic diseases in either 1915 or 1914.

For northern California the proportions are particularly high for deaths from violence other than suicide, being no less than 101.0 and 101.3 for this main division against 79.7 and 81.9 for the whole state, as well as for diseases of the nervous system other than meningitis, being 92.9 and 106.6 for this main division against 80.7 and 86.3 for the state in 1915 and 1914, respectively.

Central California excels in the proportions for diseases of the circulatory system (heart disease, etc.), 191.1 and 179.7 against state averages of 185.8 and 170.4; for pneumonia and broncho-pneumonia, 86.0 and 79.1 against 78.5 and 71.3; and for cancer, generally speaking, 73.4 and 71.4 against 71.1 and 71.6.

Southern California leads decidedly in the proportions for tuberculosis. The proportions per 1,000 total deaths for tuberculosis of the lungs were no less than 146.4 and 148.0 for this main division against only 121.8 and 120.6 for the entire state, and for tuberculosis of other organs were 20.8 and 23.0 for this division against 20.5 and 21.1 for the state. The proportions for southern California were also notably high for Bright's disease and nephritis, 74.6 and 68.9 against 68.8 and 65.2; as well as for cancer, 72.9 each year against 71.1 in 1915 and 71.6 in 1914.

Minor Geographic Divisions.—Table 3 on the following pages presents similar figures for the eight minor geographic divisions.

TABLE 2. Deaths from Certain Principal Causes, with Proportion per 1,000 Total Deaths, for Main Geographic Divisions:* 1915 and 1914.

Cause of death	The State		Northern California		Central California		Southern California	
	1915	1914	1915	1914	1915	1914	1915	1914
Deaths.								
All causes	39,026	37,537	4,101	3,957	20,803	20,060	14,122	13,491
Typhoid fever	276	376	42	46	163	215	71	115
Malarial fever	45	70	18	27	21	37	6	6
Smallpox	3	1			2	1	1	
Measles	132	153	25	14	60	116	38	23
Scarlet fever	53	90	7	13	26	58	20	19
Whooping-cough	124	306	20	34	70	213	34	50
Diphtheria and croup	310	268	14	23	197	173	99	72
Influenza	181	138	37	23	72	71	72	44
Plague	1				1			
Other epidemic diseases	116	132	15	14	63	68	38	50
Tuberculosis of lungs	4,752	4,529	375	382	2,310	2,151	2,067	1,906
Tuberculosis of other organs	799	791	71	61	435	420	293	310
Cancer	2,770	2,687	290	268	1,527	1,435	1,029	984
Other general diseases	1,645	1,591	173	191	874	841	598	559
Meningitis	273	331	20	35	157	162	96	134
Other diseases of nervous system	2,151	3,239	381	422	1,623	1,628	1,147	1,180
Diseases of circulatory system	7,251	6,307	702	682	3,975	3,009	2,484	2,106
Pneumonia and broncho-pneumonia	3,063	2,677	361	284	1,700	1,588	912	805
Other diseases of respiratory system	728	786	82	77	418	440	227	269
Diarrhea and enteritis, under 2 years	795	889	43	51	409	432	343	406
Diarrhea and enteritis, 2 years and over	415	352	49	34	196	186	170	132
Other diseases of digestive system	1,949	1,952	208	200	1,092	1,091	649	641
Bright's disease and nephritis	2,684	2,446	268	203	1,363	1,314	1,063	929
Childbirth	356	344	30	34	202	188	124	122
Diseases of early infancy	1,478	1,454	138	138	742	760	596	556
Suicide	1,035	912	105	82	592	544	338	286
Other violence	3,110	3,076	414	401	1,676	1,612	1,020	1,063
All other causes	1,525	1,570	192	218	738	736	565	616
Proportion per 1,000 Total Deaths.								
All causes	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	7.1	10.0	10.2	11.6	7.8	10.7	5.0	8.5
Malarial fever	1.1	1.9	4.4	6.8	1.0	1.8	0.4	0.5
Smallpox	0.1	†			0.1	†	0.1	
Measles	3.4	4.1	6.1	3.5	3.3	5.8	2.7	1.7
Scarlet fever	1.4	2.4	1.7	3.3	1.2	2.9	1.4	1.4
Whooping-cough	3.2	8.2	4.9	8.6	3.4	10.6	2.4	4.4
Diphtheria and croup	7.9	7.1	3.4	5.8	9.5	8.6	7.0	5.3
Influenza	4.6	3.7	9.0	5.8	3.5	3.5	5.1	3.3
Plague	†				†			
Other epidemic diseases	3.0	3.5	3.7	3.5	3.0	3.4	2.7	3.7
Tuberculosis of lungs	121.8	120.6	91.4	96.6	111.1	107.1	146.4	148.0
Tuberculosis of other organs	20.5	21.1	17.3	15.4	20.9	20.9	20.8	23.0
Cancer	71.1	71.6	53.6	67.7	73.4	71.4	72.9	72.9
Other general diseases	42.1	42.4	42.2	48.3	42.0	41.9	42.3	41.4
Meningitis	7.0	8.8	4.9	8.9	7.5	8.1	6.8	9.9
Other diseases of nervous system	80.7	86.3	92.9	106.6	78.0	81.0	81.2	88.1
Diseases of circulatory system	185.8	170.4	193.1	172.4	191.1	179.7	175.9	156.1
Pneumonia and broncho-pneumonia	78.5	71.3	88.0	71.8	86.0	79.1	64.6	50.7
Other diseases of respiratory system	18.7	20.9	20.2	19.5	20.1	21.9	16.1	19.9
Diarrhea and enteritis, under 2 years	20.4	23.7	10.5	12.9	19.7	21.5	24.3	30.1
Diarrhea and enteritis, 2 years and over	10.6	9.4	12.0	8.6	9.4	9.3	12.0	9.8
Other diseases of digestive system	49.9	51.5	50.7	50.5	52.5	54.3	46.0	47.5
Bright's disease and nephritis	68.8	65.2	65.4	51.3	65.5	65.4	74.6	68.9
Childbirth	9.1	9.2	7.3	8.6	9.7	9.4	8.8	9.0
Diseases of early infancy	37.9	38.7	33.7	34.9	35.7	37.8	42.3	41.2
Suicide	26.5	24.3	25.6	20.7	28.5	27.1	23.9	21.2
Other violence	79.7	81.9	101.0	101.3	80.6	80.2	72.2	78.8
All other causes	39.1	41.8	46.8	55.1	35.5	36.6	42.1	45.7

*For list of counties included in geographic divisions, see page 186.

TABLE 3.—Deaths from Certain Principal Causes, with Proportion

Cause of death	Deaths						
	The State	Northern California		Central California			
		Coast counties	Interior counties	San Francisco	Other bay counties	Coast counties	Interior counties
1915.							
All causes	39,026	2,088	2,013	7,250	4,706	2,610	6,226
Typhoid fever	276	7	35	41	37	14	71
Malarial fever	45	1	17	2		1	18
Smallpox	3				1	1	
Measles	132	14	11	17	15	19	18
Scarlet fever	53	4	3	7	3	4	12
Whooping-cough	124	8	12	20	22	9	19
Diphtheria and croup	310	6	8	114	35	12	36
Influenza	181	16	21	9	9	22	32
Plague	1				1		
Other epidemic diseases	116	5	10	19	13	6	25
Tuberculosis of lungs	4,752	170	206	784	491	259	776
Tuberculosis of other organs	769	41	30	170	105	50	110
Cancer	2,776	120	100	586	305	173	373
Other general diseases	1,645	89	84	312	214	105	243
Meningitis	273	14	6	43	30	24	60
Other diseases of nervous system	3,151	238	143	452	367	312	492
Diseases of circulatory system	7,251	440	352	1,536	982	572	885
Pneumonia and broncho-pneumonia	3,063	167	191	644	476	194	476
Other diseases of respiratory system	728	42	41	144	85	56	133
Diarrhea and enteritis, under 2 years	795	20	23	96	89	46	178
Diarrhea and enteritis, 2 years and over	415	29	20	44	36	32	84
Other diseases of digestive system	1,949	115	98	421	231	124	316
Bright's disease and nephritis	2,684	142	126	500	276	152	435
Childbirth	356	16	14	56	49	22	75
Diseases of early infancy	1,478	67	71	219	163	73	287
Suicide	1,035	50	55	271	96	48	175
Other violence	3,110	171	243	495	313	174	664
All other causes	1,525	96	96	257	140	106	235
1914.							
All causes	37,537	2,014	1,943	6,940	4,576	2,472	6,101
Typhoid fever	376	20	26	57	38	17	108
Malarial fever	70	3	24	5	3	5	24
Smallpox	1						1
Measles	153	6	8	42	41	12	21
Scarlet fever	90	3	10	4	7	2	45
Whooping-cough	306	15	19	56	71	27	59
Diphtheria and croup	268	14	9	86	47	3	37
Influenza	138	9	14	10	12	8	41
Other epidemic diseases	132	8	6	23	14	8	23
Tuberculosis of lungs	4,529	192	190	778	445	243	685
Tuberculosis of other organs	791	32	29	169	89	49	113
Cancer	2,687	157	111	572	326	186	351
Other general diseases	1,591	92	99	287	214	104	226
Meningitis	331	15	20	55	33	17	57
Other diseases of nervous system	3,239	254	168	419	382	290	528
Diseases of circulatory system	6,397	332	350	1,409	907	494	799
Pneumonia and broncho-pneumonia	2,677	149	135	569	388	158	473
Other diseases of respiratory system	786	43	34	161	108	51	130
Diarrhea and enteritis, under 2 years	889	23	28	91	76	59	208
Diarrhea and enteritis, 2 years and over	352	12	22	43	34	32	77
Other diseases of digestive system	1,982	98	102	404	212	143	332
Bright's disease and nephritis	2,446	111	92	472	290	147	405
Childbirth	344	15	19	56	45	27	60
Diseases of early infancy	1,454	76	62	235	188	81	261
Suicide	912	46	36	233	124	40	147
Other violence	3,076	174	227	476	322	167	647
All other causes	1,570	115	108	225	165	98	253

*Less than one-tenth of 1 per thousand.

per 1,000 Total Deaths, for Minor Geographic Divisions: 1915 and 1914.

		Proportion per 1,000 total deaths								
Southern California		The State	Northern California		Central California				Southern California	
Los Angeles	Other counties		Coast counties	Interior counties	San Francisco	Other bay counties	Coast counties	Interior counties	Los Angeles	Other counties
9,590	4,582	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
38	33	7.1	3.3	17.4	5.7	7.9	5.4	11.4	4.0	7.3
2	4	1.1	0.5	8.4	0.3		0.4	2.9	0.2	0.9
1		0.1				0.2	0.4		0.1	
26	12	8.4	6.7	5.5	2.3	3.2	7.3	2.9	2.7	2.6
14	6	1.4	1.9	1.5	1.0	0.6	1.5	1.9	1.5	1.3
21	13	3.2	3.8	6.0	2.3	4.7	3.5	3.1	2.2	2.9
66	33	7.9	2.9	4.0	15.7	7.4	4.6	5.8	6.9	7.3
40	32	4.6	7.7	10.4	1.2	1.9	8.4	5.1	4.2	7.1
		*				0.2				
27	11	3.0	2.4	5.0	2.6	2.8	2.3	4.0	2.8	2.4
1,406	661	121.8	81.4	101.8	106.0	104.3	99.2	124.6	146.6	145.8
187	106	20.5	19.6	14.9	23.4	22.3	19.2	17.7	19.5	23.4
750	279	71.1	67.5	49.7	90.7	83.9	66.3	59.9	78.2	61.6
408	195	42.1	42.6	41.7	43.0	45.5	40.2	39.0	42.0	43.0
59	37	7.0	6.7	3.0	6.9	6.4	9.2	9.6	6.2	8.2
707	440	80.7	114.0	71.0	62.3	78.0	119.5	79.0	73.7	97.1
1,781	708	186.8	210.7	174.9	211.0	208.7	219.1	142.1	185.7	155.1
657	255	78.5	80.0	96.4	88.7	101.1	74.3	76.4	68.5	56.3
151	76	18.7	20.1	20.4	19.8	18.1	21.5	21.4	15.7	16.8
197	146	20.4	9.6	11.4	13.2	18.9	17.6	28.6	20.5	32.2
106	65	10.6	13.9	9.9	6.1	7.7	12.3	13.5	10.9	14.3
451	198	49.9	55.1	46.2	58.0	49.1	47.5	50.7	47.0	43.7
796	257	68.8	68.0	62.6	68.9	58.7	58.2	69.8	83.0	56.7
86	38	9.1	7.7	7.0	7.7	10.4	8.4	12.1	9.0	8.4
378	220	37.9	32.1	35.2	30.2	34.6	28.0	46.1	39.4	48.5
222	106	26.5	23.9	27.3	37.3	20.8	18.4	28.1	24.2	23.4
597	423	79.7	81.9	120.7	66.2	72.9	66.7	106.6	62.3	93.3
412	183	89.1	46.0	47.7	35.4	29.7	40.6	37.7	43.0	40.4
9,038	4,453	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
52	63	10.0	9.9	13.4	8.2	8.3	6.9	16.0	5.8	14.1
5	1	1.9	1.5	12.4	0.7	0.7	2.0	3.9	0.5	0.2
		*						0.2		
12	11	4.1	3.0	4.1	6.1	9.0	4.9	3.4	1.3	2.5
8	11	2.4	1.5	5.1	0.6	1.5	0.8	7.4	0.9	2.5
23	31	8.2	7.4	9.8	8.1	15.5	10.9	9.7	3.1	7.0
54	18	7.1	7.0	4.6	12.4	10.3	1.2	6.1	6.0	4.0
27	17	3.7	4.5	7.2	1.4	2.6	3.2	6.7	3.0	3.8
32	18	3.5	4.0	3.1	3.3	3.1	3.2	3.8	3.5	4.0
1,373	623	120.6	95.3	97.8	112.1	97.2	98.3	112.3	151.9	139.9
202	106	21.1	15.9	14.9	21.3	19.4	19.8	18.5	22.3	24.3
708	281	71.6	78.0	57.1	82.4	71.2	75.2	57.5	77.8	63.1
364	196	42.4	45.7	51.0	41.4	46.8	42.1	38.7	40.3	43.8
79	55	8.8	7.4	10.3	7.9	7.2	6.9	9.3	8.7	12.3
740	449	86.3	126.1	86.5	60.4	83.5	121.0	86.5	81.9	100.8
1,496	610	170.4	164.8	180.1	203.0	198.2	199.8	131.0	165.5	137.0
544	261	71.3	74.0	69.5	82.0	84.8	63.9	77.5	60.2	58.6
191	78	20.9	21.4	17.5	23.2	23.6	20.6	19.7	21.1	17.5
212	194	23.7	11.4	14.4	13.5	16.6	23.9	33.3	23.5	43.6
84	48	9.4	6.0	11.3	6.2	7.4	13.0	12.6	9.3	10.8
452	189	51.5	48.7	52.5	58.2	46.3	57.8	54.4	50.0	42.4
665	264	65.2	55.1	47.4	68.0	63.4	59.5	66.4	73.6	59.3
78	44	9.2	7.4	9.8	8.1	9.8	10.9	9.8	8.6	9.9
374	182	38.7	37.7	31.9	33.9	40.0	32.8	42.8	41.4	40.9
194	92	21.3	22.8	18.5	33.6	27.1	16.2	21.1	21.5	20.7
631	432	81.9	86.4	116.8	68.6	70.4	67.6	106.0	69.3	97.0
438	178	41.8	57.1	53.0	32.4	36.1	37.6	41.5	48.5	40.0

From the proportions per 1,000 total deaths shown for minor geographic divisions it appears that the relatively high proportions for typhoid fever noted for northern and central California both years were practically confined to the interior counties. The proportions for typhoid fever were relatively high each year for the interior counties of both northern and central California and for the counties of southern California other than Los Angeles, as well as for the bay counties other than San Francisco in 1915 alone. As compared with state averages of 7.1 and 10.0 in 1915 and 1914, respectively, the proportions per 1,000 total deaths were no less than 17.4 and 13.4 for the interior counties of northern California; 11.4 and 16.9 for the interior counties of central California; 7.3 and 14.1 for southern California except Los Angeles; and 7.9 for the bay counties except San Francisco in 1915 only.

The proportion for diphtheria and croup was above the state average of 7.9 in 1915 and 7.1 in 1914 only for San Francisco in both years, 15.7 and 12.4, respectively, but was notably high each year also for the adjacent other bay counties, 7.4 and 10.3.

The proportions for whooping cough were above the state averages of 3.2 and 8.2 for the bay counties other than San Francisco, 4.7 and 15.5; for the coast counties of central California, 3.5 and 10.9; for the interior counties of northern California, 6.0 and 9.8; and also for the coast counties of northern California, 3.8, in 1915 only, as well as for the interior counties of central California, 9.7, in 1914 alone.

The proportion for measles was above the general average of 3.4 in 1915 for the coast counties of central California, 7.3; the coast counties of northern California, 6.7; and the interior counties of northern California, 5.5. The proportion was above the average of 4.1 for 1914 for the bay counties except San Francisco, 9.0; the metropolis itself, 6.1; and the coast counties of central California, 4.9.

The coast counties of northern California have very high proportions for diseases of the nervous system other than meningitis, 114.0 and 126.1 in 1915 and 1914 against state averages of only 80.7 and 86.3. This is accounted for by the fact that many of the deaths reported for this geographic division occurred at the Mendocino and Napa state hospitals. The proportions for diseases of the nervous system are also quite high for the coast counties of central California, 119.5 and 121.0, and for the counties south of Tehachapi except Los Angeles, 97.1 and 100.8, the former division including the Agnews State Hospital and the latter the Southern California State Hospital.

The interior counties of northern California show proportions that are very high indeed, 120.7 and 116.8 against state averages of only 79.7 and 81.9, for miscellaneous deaths from violence, as drowning, railroad injuries, other accidents, etc.

The proportions for diseases of the circulatory system (185.8 and 170.4 for the state in 1915 and 1914) are particularly high for San Francisco (211.6 and 203.0), for the other bay counties (208.7 and 198.2), for the adjoining coast counties of central California (219.1 and 199.8) and also for the coast counties of northern California, 210.7, in 1915 only and the interior counties of northern California, 180.1, in 1914 alone.

The proportions for pneumonia and broncho-pneumonia (78.5 for the state in 1915 and 71.3 in 1914) were especially high both years for San Francisco (88.7 and 82.0) and the other bay counties (101.1 and 84.8). The proportion for pneumonia was also notably great in 1915 for the coast (80.0) and interior (96.4) counties of northern California and in 1914 for the coast counties of northern California (74.0) and the interior counties of central California (77.5).

The proportion of total deaths at all ages for diarrhea and enteritis among children under two years of age, 20.4 in 1915 and 23.7 in 1914, was highest each year for southern California outside Los Angeles, 32.2 and 43.6, and next for the interior counties of central California, 28.6 and 33.3.

In the city and county of San Francisco the proportions per 1,000 total deaths for cancer were as great as 80.7 in 1915 and 82.4 in 1914 against state averages of 71.1 and 71.6. Similarly, the proportions for suicide were 37.3 and 33.6 for San Francisco as compared with only 26.5 and 24.3 for the state as a whole.

The proportions for tuberculosis of the lungs, 121.8 in 1915 and 120.6 in 1914, were no less than 146.6 and 151.9 for Los Angeles and 145.8 and 139.9 for the other counties south of Tehachapi. Similarly, against state averages of 20.5 and 21.1 for tuberculosis of other organs, the proportions per 1,000 total deaths were 19.5 in 1915 and 22.3 in 1914 for Los Angeles, and 23.4 and 24.3, respectively, for the rest of southern California.

In the county of Los Angeles the proportions per 1,000 total deaths for cancer were 78.2 and 77.8 against state averages of 71.1 and 71.6 for 1915 and 1914, respectively, and for Bright's disease and nephritis were likewise 83.0 and 73.6 as compared with general averages of 68.8 and 65.2.

Urban and Rural Districts.—The table which follows has been prepared to bring out the contrast between mortality conditions in urban and rural districts, figures like those in preceding tables being given here for the metropolitan area, comprising San Francisco and the other bay counties (Alameda, Contra Costa, Marin, and San Mateo), as compared with the rural counties of northern and central California:

TABLE 4.—Deaths from Certain Principal Causes, with Proportion per 1,000 Total Deaths, for Metropolitan Area and Rural Counties of Northern and Central California: 1915 and 1914.

Cause of death	Northern and Central California		Metropolitan area		Rural counties	
	1915	1914	1915	1914	1915	1914
Deaths						
All causes -----	24,904	24,046	11,965	11,516	12,989	12,530
Typhoid fever -----	205	261	78	95	127	166
Malarial fever -----	89	64	2	8	87	56
Smallpox -----	2	1	1		1	1
Measles -----	94	130	32	83	63	47
Scarlet fever -----	33	71	10	11	23	60
Whooping-cough -----	90	247	42	127	48	120
Diphtheria and croup -----	211	196	149	133	62	63
Influenza -----	109	94	18	22	91	72
Plague -----	1		1			
Other epidemic diseases -----	78	82	32	37	46	45
Tuberculosis of lungs -----	2,685	2,533	1,275	1,223	1,410	1,310
Tuberculosis of other organs -----	506	481	275	258	231	223
Cancer -----	1,747	1,703	981	898	766	805
Other general diseases -----	1,047	1,032	526	501	521	531
Meningitis -----	177	197	73	88	104	109
Other diseases of nervous system -----	2,004	2,050	819	801	1,185	1,249
Diseases of circulatory system -----	4,767	4,291	2,518	2,316	2,249	1,975
Pneumonia and broncho-pneumonia -----	2,151	1,872	1,120	967	1,081	915
Other diseases of respiratory system -----	501	517	229	260	272	248
Diarrhea and enteritis, under 2 years -----	452	483	185	170	267	313
Diarrhea and enteritis, 2 years and over -----	245	220	80	77	165	143
Other diseases of digestive system -----	1,300	1,291	652	616	648	675
Bright's disease and nephritis -----	1,681	1,517	776	702	855	755
Childbirth -----	232	222	105	101	127	121
Diseases of early infancy -----	880	896	382	418	498	480
Suicide -----	697	626	369	357	323	299
Other violence -----	2,090	2,013	838	798	1,252	1,215
All other causes -----	930	954	397	390	533	564
Proportion per 1,000 Total Deaths.						
All causes -----	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever -----	8.2	10.9	6.5	8.2	9.8	13.2
Malarial fever -----	1.6	2.7	0.2	0.7	2.9	4.5
Smallpox -----	0.1	*	0.1		0.1	0.1
Measles -----	3.8	5.4	2.7	7.2	4.8	3.8
Scarlet fever -----	1.3	3.0	0.8	0.9	1.8	4.8
Whooping-cough -----	3.6	10.3	3.5	11.0	3.7	9.6
Diphtheria and croup -----	8.5	8.2	12.4	11.5	4.8	5.0
Influenza -----	4.4	3.9	1.5	1.9	7.0	5.7
Plague -----	*		0.1			
Other epidemic diseases -----	3.1	3.4	2.7	3.2	3.6	3.6
Tuberculosis of lungs -----	107.8	105.3	106.6	106.2	109.0	104.5
Tuberculosis of other organs -----	20.3	20.0	23.0	22.4	17.8	17.8
Cancer -----	70.2	70.8	82.0	78.0	59.2	64.2
Other general diseases -----	42.1	42.9	44.0	43.5	40.3	42.4
Meningitis -----	7.1	8.2	6.1	7.6	8.0	8.7
Other diseases of nervous system -----	80.5	85.3	68.4	69.6	91.6	99.7
Diseases of circulatory system -----	191.4	178.4	210.4	201.1	173.8	157.6
Pneumonia and broncho-pneumonia -----	86.4	77.9	98.6	83.1	79.7	73.0
Other diseases of respiratory system -----	20.1	21.5	19.1	23.4	21.0	19.3
Diarrhea and enteritis, under 2 years -----	18.2	20.1	15.5	14.8	20.6	25.0
Diarrhea and enteritis, 2 years and over -----	9.8	9.1	6.7	6.7	12.7	11.4
Other diseases of digestive system -----	52.2	53.7	54.5	53.5	50.1	53.9
Bright's disease and nephritis -----	67.5	63.1	64.9	66.2	66.1	60.2
Childbirth -----	9.3	9.2	8.8	8.8	9.8	9.7
Diseases of early infancy -----	35.2	37.3	31.9	36.3	33.5	32.3
Suicide -----	28.0	26.0	30.8	31.0	25.3	21.5
Other violence -----	83.9	83.7	70.0	69.3	96.8	97.0
All other causes -----	37.3	39.7	33.2	33.9	41.2	45.0

*Less than one-tenth of 1 per thousand.

There were approximately the same number of deaths each year in the metropolitan area as in all the other counties north of Tehachapi; the respective totals being 11,965 and 12,939 in 1915 and 11,516 and 12,530 in 1914. However, there are marked differences between the whole urban area and the rural districts in the distribution of deaths by principal causes.

The proportion per 1,000 total deaths for typhoid fever was only 6.5 in 1915 and 8.2 in 1914 for the metropolitan area as compared with 9.8 and 13.2 for the rural counties. Similarly, the proportions for malarial fever were merely 0.2 and 0.7 for the urban territory against 2.9 and 4.5 for the country districts. The proportions for scarlet fever were likewise only 0.8 and 0.9 for the urban territory as compared with 1.8 and 4.8 for the rural sections.

The proportions for whooping cough were 3.5 and 11.0 for the metropolitan area against 3.7 and 9.6 for the rural counties, and the proportions for measles were 2.7 and 7.2 for the former against 4.8 and 3.8 for the latter. The proportions for both whooping cough and measles were less for the urban territory than for the country districts in 1915, though greater in both instances for the urban territory than for the rural sections in 1914.

However, the proportion for diphtheria and croup was much greater in both 1915 and 1914 for the metropolitan area, 12.4 and 11.5, than for the rural territory, only 4.8 and 5.0, respectively.

The proportion of deaths from diseases of the circulatory system (heart disease, etc.) is very much higher for the urban territory than for the rural districts, the proportions per 1,000 total deaths for the former in 1915 and 1914 being as great as 210.4 and 201.1 against only 173.8 and 157.6 for the latter. The proportions for Bright's disease and nephritis, which often occur with heart disease, were also generally higher for the metropolitan area, 64.9 and 66.2, than for the rural counties, 66.1 and 60.2.

Other important cases in which the proportions per 1,000 total deaths were generally higher in both 1915 and 1914 for the urban territory than for the country districts are as follows: Cancer, 82.0 and 78.0 against 59.2 and 64.2; pneumonia and broncho-pneumonia, 93.6 and 83.1 against 79.7 and 73.0; diseases of the digestive system other than diarrhea and enteritis, 54.5 and 53.5 against 50.1 and 53.9; and suicide, 30.8 and 31.0 against 25.3 and 21.5.

On the other hand, the proportions were higher in both 1915 and 1914 for the rural counties than for the metropolitan area in the following important notable instances: Diseases of the nervous system other than meningitis, 91.6 and 99.7 as compared with 68.4 and 69.6; diarrhea and enteritis (under 2 years), 20.6 and 25.0 as compared with 15.5 and 14.8; violence other than suicide (*i. e.*, sundry accidents), 96.8 and 97.0 as compared with 70.0 and 69.3; and miscellaneous causes (including "old age"), 41.2 and 45.0 as compared with 33.2 and 33.9.

In short, there are relatively more deaths in the metropolitan area than in the rural counties north of Tehachapi from heart disease, Bright's disease, cancer, pneumonia, digestive ailments (except diarrhea), and suicide, as well as from diphtheria and croup. However, there is a relatively greater mortality in country districts than in the

urban territory from diseases of the nervous system, infantile diarrhea, accidental violence, and "old age," as well as from typhoid fever, malarial fever, and scarlet fever.

Cities and Rest of State.—A further contrast between mortality conditions in city and country districts is available for 1915 and 1914 by comparing deaths in chartered cities as a class with deaths in all the rest of the state. There were thirty-four freeholders' charter cities in 1915 and thirty-two in 1914, the two additional cities being Bakersfield with 286 deaths and Alhambra with 87. Table 5 on the following page shows for 1915 and 1914 the number of deaths from certain principal causes, as well as the proportion from each cause per 1,000 total deaths, for chartered cities as a class and for the rest of the state as a whole.

TABLE 5.—Deaths from Certain Principal Causes, with Proportion per 1,000 Total Deaths, for Freeholders' Charter Cities and Rest of State: 1915 and 1914.

Cause of death	California		Freeholders' charter cities		Rest of state	
	1915	1914	1915	1914	1915	1914
Deaths						
All causes	39,026	37,537	23,821	22,725	15,805	15,012
Typhoid fever	276	376	156	198	120	178
Malarial fever	45	70	9	20	36	50
Smallpox	3	1	1	1	2	—
Measles	132	153	67	103	65	50
Scarlet fever	58	90	23	29	30	61
Whooping-cough	124	306	67	165	57	141
Diphtheria and croup	310	298	228	177	82	91
Influenza	181	188	73	58	108	80
Plague	1	—	—	—	1	—
Other epidemic diseases	116	132	65	77	51	55
Tuberculosis of lungs	4,752	4,529	2,756	2,506	1,966	1,963
Tuberculosis of other organs	799	791	560	510	249	281
Cancer	2,776	2,687	1,936	1,814	840	873
Other general diseases	1,615	1,791	1,049	981	596	610
Meningitis	273	331	154	185	119	146
Other diseases of nervous system	3,151	3,239	1,785	1,788	1,306	1,451
Diseases of circulatory system	7,251	6,897	4,662	4,085	2,599	2,312
Pneumonia and broncho-pneumonia	3,063	2,677	1,893	1,616	1,170	1,061
Other diseases of respiratory system	728	786	427	476	301	310
Diarrhea and enteritis, under 2 years	795	880	403	452	392	437
Diarrhea and enteritis, 2 years and over	415	352	231	206	184	146
Other diseases of digestive system	1,949	1,932	1,303	1,264	646	608
Bright's disease and nephritis	2,684	2,446	1,668	1,588	996	856
Childbirth	356	344	229	208	127	136
Diseases of early infancy	1,478	1,454	833	891	645	563
Suicide	1,035	912	682	616	353	296
Other violence	3,110	3,076	1,639	1,555	1,471	1,521
All other causes	1,525	1,570	922	896	603	674
Proportion per 1,000 Total Deaths.						
All causes	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	7.1	10.0	6.5	8.8	7.9	11.9
Malarial fever	1.1	1.9	0.4	0.9	2.4	3.3
Smallpox	0.1	•	•	•	0.1	—
Measles	3.4	4.1	2.8	4.6	4.3	3.3
Scarlet fever	1.4	2.4	1.0	1.3	2.0	4.1
Whooping-cough	3.2	8.2	2.8	7.3	3.8	9.4
Diphtheria and croup	7.9	7.1	9.6	7.9	5.4	6.1
Influenza	4.6	3.7	3.1	2.6	7.1	5.3
Plague	•	—	—	—	0.1	—
Other epidemic diseases	3.0	3.5	2.7	3.4	3.4	3.7
Tuberculosis of lungs	121.8	120.6	115.7	113.9	131.3	130.8
Tuberculosis of other organs	20.5	21.1	23.1	22.6	16.4	18.7
Cancer	71.1	71.6	81.3	80.5	55.2	58.2
Other general diseases	42.1	42.4	44.0	43.6	39.2	40.6
Meningitis	7.0	8.8	6.5	8.2	7.8	9.7
Other diseases of nervous system	80.7	86.3	74.9	79.4	89.8	96.7
Diseases of circulatory system	185.8	170.4	195.3	181.3	170.9	154.0
Pneumonia and broncho-pneumonia	78.5	71.3	79.5	71.7	77.0	70.7
Other diseases of respiratory system	18.7	20.9	17.9	21.1	19.8	20.6
Diarrhea and enteritis, under 2 years	20.4	23.7	16.9	20.1	23.8	29.1
Diarrhea and enteritis, 2 years and over	10.6	9.4	9.7	9.2	12.1	9.7
Other diseases of digestive system	49.9	51.5	54.7	56.1	42.5	44.5
Bright's disease and nephritis	68.8	65.2	70.9	70.5	65.5	57.1
Childbirth	9.1	9.2	9.6	9.2	8.4	9.1
Diseases of early infancy	37.9	38.7	35.0	39.6	42.4	37.5
Suicide	26.5	24.3	28.6	27.4	23.2	19.7
Other violence	79.7	81.9	68.8	69.0	96.5	101.3
All other causes	39.1	41.8	38.7	39.8	39.7	44.9

*Less than one-tenth of 1 per thousand.

Of the 39,026 deaths in California in 1915, altogether 23,831, or 61.0 per cent, occurred in the thirty-four freeholders' charter cities and 15,205, or 39.0 per cent, occurred in all the rest of the state. Of the 37,537 deaths in 1914, the number within the thirty-two chartered cities was 22,525, or 60.0 per cent, and the number outside these cities was 15,012, or 40.0 per cent. Each year about three-fifths of the deaths in California occurred within chartered cities and about two-fifths outside them.

The proportion per 1,000 total deaths for typhoid fever was only 6.5 in 1915 and 8.8 in 1914 for chartered cities as a class against 7.9 and 11.9, respectively, for all the rest of the state as a whole. The proportions were also less for chartered cities than for the rest of California for malarial fever, 0.4 and 0.9 against 2.4 and 3.3; for scarlet fever, 1.0 and 1.3 against 2.0 and 4.1; and for whooping cough, 2.8 and 7.3 against 3.8 and 9.4.

Relatively more deaths occur within cities than outside them, however, from diseases of the circulatory system (heart disease, etc.). The proportions per 1,000 total deaths in 1915 and 1914, respectively, were 195.3 and 181.3 for chartered cities as compared with 170.9 and 154.0 for the rest of the state. For Bright's disease and nephritis, often reported with heart disease, the proportions were likewise much greater within chartered cities, 70.9 and 70.5, than outside them, 65.5 and 57.1.

The proportions per 1,000 total deaths were also higher in 1915 as well as 1914 for chartered cities than for the rest of California in the following important cases: Cancer, 81.3 and 80.5 against 55.2 and 58.2; pneumonia and broncho-pneumonia, 79.5 and 71.7 against 77.0 and 70.7; diseases of the digestive system other than diarrhea and enteritis, 54.7 and 56.1 against 42.5 and 44.5; suicide, 28.6 and 27.4 against 23.2 and 19.7; and diphtheria and croup, 9.6 and 7.9 against 5.4 and 6.1.

On the other hand, the proportions were higher in both 1915 and 1914 outside cities than within them in certain notable instances, as follows: Diseases of the nervous system other than meningitis, 89.8 and 96.7 as compared with 74.9 and 79.4; diarrhea and enteritis (under 2 years) 25.8 and 29.1 as compared with 16.9 and 20.1; violence other than suicide (*i. e.*, various accidental injuries), 96.5 and 101.3 as compared with 68.8 and 69.0; and miscellaneous causes (including "old age"), 39.7 and 44.9 as compared with 38.7 and 39.8.

In other words, there are relatively more deaths within chartered cities than outside them from heart disease, Bright's disease, cancer, pneumonia, digestive ailments (except diarrhea), and suicide, besides diphtheria and croup among epidemic diseases. Mortality is relatively greater outside cities than within them, however, from diseases of the nervous system (except meningitis), diarrhea and enteritis (under 2 years), accidental injuries, and "old age," as well as from typhoid fever, malarial fever, scarlet fever, and whooping cough.

Individual Counties.—Preceding figures for deaths in main and minor geographic divisions in 1915 and 1914 are supplemented by extended tables giving similar figures for the fifty-eight counties in both years. The counties are arranged in geographic order, by minor geographic divisions, but for the sake of ready reference the counties in each group are listed alphabetically. The grouping of the counties according to

geographic location facilitates the analysis of mortality conditions in any minor geographic division by immediate reference to the counties included in the group.

These tables, because of their length, are placed with other general tables toward the end of the section on deaths, but for convenience in reference the titles are given here as follows:

TABLE 34.—Deaths from certain principal causes, for counties arranged geographically: 1915 and 1914.

TABLE 35.—Proportion per 1,000 total deaths from certain principal causes, for selected counties (reporting 300 deaths) arranged geographically: 1915 and 1914.

Individual Cities.—Corresponding figures for individual chartered cities appear in Tables 31 and 32, *post*. In these tables the cities are arranged in rough geographic order to facilitate comparisons between neighboring cities or between cities in the same portion of the state.

The tables for individual chartered cities in 1915 and 1914, like similar tables for counties, appear with other general tables toward the close of the section on deaths. However, the titles of these city tables are here given as follows:

TABLE 36.—Deaths from certain principal causes, for freeholders' charter cities arranged geographically: 1915 and 1914.

TABLE 37.—Proportion per 1,000 total deaths from certain principal causes, for selected freeholders' charter cities (reporting 200 deaths) arranged geographically: 1915 and 1914.

Mortality by Months.—The following table shows for California as a whole the distribution of total deaths by month of occurrence for both 1915 and 1914 as well as the corresponding daily average number of deaths each month for the five-year period, 1911 to 1915.

TABLE 6.—Deaths Classified by Month of Occurrence, with Daily Averages, for California: 1915 and 1914.

Month of occurrence	Deaths			Daily average				General daily average: 1911 to 1915
	1915	1914	1915	1914	1913	1912	1911	
State totals	39,026	37,537	107	103	106	100	93	102
January	3,616	3,392	117	109	*134	111	*111	*116
February	3,015	3,121	108	111	113	107	100	108
March	3,441	3,295	111	106	110	110	96	107
April	3,171	3,159	106	105	108	102	90	102
May	3,276	3,080	106	99	105	98	92	100
June	3,060	3,073	102	102	103	93	87	97
July	3,016	2,913	107	94	99	97	84	94
August	3,006	2,827	107	101	95	107	103	101
September	2,927	2,817	98	94	104	89	85	92
October	3,184	2,931	103	95	98	90	85	95
November	3,425	3,213	114	107	100	101	98	104
December	3,889	3,716	*125	*120	111	*114	107	115

*Maximum.

†Minimum.

From the general daily averages for the whole five years, 1911 to 1915, it appears that the average daily mortality dropped successively from the maximum of 116 for January to 108 for February, 107 for March, 102 for April, 100 for May, 97 for June, 94 for July, and 91 for August. From the minimum of 91 for August, the daily average number of deaths increased steadily to 92 for September, 95 for October, 104 for November, and 115 for December.

The respective daily averages for each year from 1911 to 1915 likewise show that mortality decreases generally in the period from January to August, while increasing regularly in the later months of September to December. The month of maximum daily mortality was January in 1911 and 1913 and December in 1912, 1914 and 1915. August was the month of minimum daily mortality in each of the five years except 1913, when the average was slightly lower for September than for August, although the average was equally low for both July and August in 1915.

The figures indicate on the whole that in California the summer season is the healthiest in respect to the small number of deaths occurring through the months of July to September.

TUBERCULOSIS IN CALIFORNIA.

The State.—Tuberculosis is the leading single cause of death in California, being the cause of about one-seventh of all deaths. Of 39,026 deaths reported to the State Bureau of Vital Statistics for 1915, altogether 5,551 were from tuberculosis, and of 37,537 deaths reported for 1914, some 5,320 were also from the "great white plague," the per cent being 14.2 each year against the average of 14.6 for the ten years last past.

For comparison it may be noted that in 1915 and 1914, respectively, the totals for all diseases of the circulatory system (heart disease, etc.) were 7,251 and 6,397; for all diseases of the respiratory system (pneumonia, etc.), were only 3,791 and 3,463; for all diseases of the nervous system were only 3,424 and 3,570; for all diseases of the digestive system were only 3,159 and 3,173; for miscellaneous violence (except suicide) were only 3,110 and 3,076; for cancer in all forms were only 2,776 and 2,687; and for Bright's disease and nephritis were only 2,684 and 2,446.

From tuberculosis of the lungs there were 4,752 deaths in 1915 as compared with 4,529 in 1914, while from tuberculosis of other organs there were 799 deaths in 1915 against 791 in 1914. The distribution of deaths from tuberculosis of the lungs and other organs was as follows for California in 1915 and 1914, respectively:

	1915.	1914.
Deaths from tuberculosis (all forms)-----	5,551	5,320
Tuberculosis of the lungs-----	4,752	4,529
Tuberculosis of other organs-----	799	791
Acute miliary tuberculosis -----	126	114
Tuberculosis meningitis -----	323	313
Abdominal tuberculosis -----	204	207
Pott's disease -----	32	38
White swellings -----	21	9
Tuberculosis of other organs-----	66	73
Disseminated tuberculosis -----	27	37

The proportion per 1,000 total deaths in 1915 was 121.8 for tuberculosis of the lungs and 20.5 for tuberculosis of other organs, or 142.3 for all forms of this disease. Of each 1,000 deaths in California in 1914, there were 120.6 from tuberculosis of the lungs and 21.1 from tuberculosis of other organs, or 141.7 from tuberculosis of all forms. For

1906 to 1915 the annual average proportion per 1,000 total deaths was 125.3 for pulmonary tuberculosis and 20.8 for other forms, or altogether 146.1 for all forms. In the ten years, the proportion per 1,000 total deaths for tuberculosis of all forms ranged as follows: 151.4 (1906), 148.1, 145.9, 150.8, 150.3, 150.4, 139.7, 139.9, 141.7, and 142.3 (1915).

For an estimated state population of 2,854,727 in 1915 the death rate per 100,000 population is 166.5 for tuberculosis of the lungs and 28.0 for tuberculosis of other organs, or altogether 194.5 for all forms of this disease. Similarly, for an estimated population of 2,763,109 for 1914, the death rate per 100,000 is 163.9 for pulmonary tuberculosis and 28.6 for other forms, or 192.5 for all kinds. For the ten years last past the annual average death rate per 100,000 population is 175.0 for pulmonary tuberculosis and 29.0 for other forms, or altogether 204.0 for tuberculosis of all forms. The death rate per 100,000 for tuberculosis of all forms together decreased generally through the ten years, 1906 to 1915, thus: 218.0 (1906), 216.8, 206.1, 202.6, 203.3, 205.5, 198.8, 202.2, 192.5, and 194.5 (1915).

In contrast with the fact that for tuberculosis of all forms the death rate per 100,000 decreased considerably from 218.0 in 1906 to 194.5 in 1915, it is worth noting that through the same period the death rate for all diseases of the circulatory system (heart disease, etc.) increased greatly as indicated by the following figures: 185.1 (1906), 205.2, 204.9, 215.3, 212.2, 221.7, 247.2, 235.1, 231.5, and 254.0 (1915).

As compared with the annual average death rate per 100,000 for 1906 to 1915 of 204.0 for various forms of tuberculosis, the corresponding death rate was 221.2 for all diseases of the circulatory system (heart disease, etc.), but only 142.3 for all diseases of the respiratory system (pneumonia, etc.), 130.7 for all diseases of the nervous system, 125.2 for all diseases of the digestive system, 116.1 for miscellaneous violence (except suicide), 85.6 for cancer in all forms, and 85.5 for Bright's disease and nephritis.

The general death rate per 1,000 population was 13.7 for 1915 and 13.6 for 1914, these rates, like those for earlier years, being swollen largely by the great mortality from tuberculosis. Figures will be presented which show that many deaths from tuberculosis in California occur among persons of short residence in the state, who came here when too far gone with the disease for the climate to effect a cure. Doubtless many other cases originating here are due in some degree to the presence of this imported infection.

Geographic Divisions.—Southern California is an especially popular resort for consumptives, and here from one-sixth to one-fifth of all deaths are due to tuberculosis. The table which appears below shows the number and per cent of deaths from tuberculosis for the several geographic divisions of the state in both 1915 and 1914, together with the annual average per cent for 1906 to 1915 as additional data.

TABLE 7.—Number and Per Cent of Deaths from Tuberculosis, for Geographic Divisions: 1915 and 1914.

Geographic division	Deaths		Tuberculosis				Annual average per cent: 1906 to 1915
			Number		Per cent		
	1915	1914	1915	1914	1915	1914	
The State -----	39,026	37,537	5,551	5,320	14.2	14.2	14.6
Northern California -----	4,101	3,957	446	443	10.9	11.2	11.1
Coast counties -----	2,068	2,014	211	224	10.1	11.1	11.6
Interior counties -----	2,013	1,943	235	219	11.7	13.3	10.9
Central California -----	20,903	20,060	2,745	2,571	13.2	12.8	13.0
San Francisco -----	7,250	6,940	954	947	13.1	13.6	12.9
Other bay counties -----	4,706	4,576	506	534	12.7	11.7	12.3
Coast counties -----	2,610	2,472	309	292	11.8	11.8	13.3
Interior counties -----	6,228	6,101	886	798	14.2	13.1	13.5
Southern California -----	14,122	13,491	2,360	2,306	16.7	17.1	18.8
Los Angeles -----	9,590	9,038	1,503	1,575	16.6	17.4	18.8
Other counties -----	4,532	4,453	767	731	16.9	16.4	18.8
Northern and Central California -----	24,904	24,040	3,191	3,014	12.8	12.5	12.6
Coast counties -----	16,663	16,002	2,070	1,907	12.4	12.5	12.6
Interior counties -----	8,241	8,044	1,121	1,017	13.6	12.6	12.8
Metropolitan area -----	11,965	11,516	1,550	1,481	13.0	12.9	12.7
Rural counties -----	12,939	12,530	1,641	1,533	12.7	12.2	12.7

Table 7 shows that for southern California the per cent of total deaths from tuberculosis was 16.7 in 1915 and 17.1 in 1914 against the annual average of 18.8 for 1906 to 1915. It may be added that through the ten-year period the per cent of deaths from tuberculosis in southern California ranged as follows: 21.6 (1906), 20.1, 19.8, 19.8 again, 19.2, 19.4, 17.5, 17.0, 17.1 and 16.7 (1915). Thus between one-sixth and one-fifth of all deaths are due to tuberculosis in the territory south of Tehachapi, the proportion having decreased generally through the past ten years. The annual average per cent for 1906 to 1915 was exactly the same, 18.8, for Los Angeles alone as for all the rest of southern California.

North of Tehachapi, however, only about one-eighth of all deaths are from tuberculosis, the per cents for northern and central California together being 12.8 in 1915 and 12.5 in 1914 against the average of 12.6 for 1906 to 1915. The annual average per cent in the ten-year period just ended was 13.0 for central California and only 11.1 for northern California, the prevalence of tuberculosis decreasing toward the north. The average per cent was below the state figure, 14.6, for every main and minor geographic division north of Tehachapi, the interior counties of northern California showing the minimum average, 10.9, but the interior counties of central California showing the highest, 13.5, outside southern California.

The annual average per cent of deaths from tuberculosis was just the same (12.7) for the metropolitan area as for the rural counties south of Tehachapi. Within the metropolitan area, however, the annual average per cent was somewhat greater for San Francisco, 12.9, than for the other bay counties, 12.3.

Cities.—The following table gives the number and per cent of deaths from tuberculosis in 1915 and 1914, and in addition the annual average per cents for 1911 to 1915, for chartered cities in contrast with the rest of the state, as well as for the individual cities. The average per cents are shown for only the five years last past because figures are not available for all the cities for a whole ten-year period.

TABLE 8.—Number and Per Cent of Deaths from Tuberculosis, for Individual Cities and Rest of State: 1915 and 1914.

City	Deaths		Tuberculosis				Annual average per cent: 1911 to 1915
	1915	1914	Number		Per cent		
			1915	1914	1915	1914	
California	39,026	37,537	5,551	5,320	14.2	14.2	14.3
Freeholders' charter cities.....	23,821	22,525	3,306	3,076	13.9	13.7	14.0
Northern California:							
Eureka	223	223	23	19	10.1	8.5	11.7
Napa	116	84	8	4	6.9	4.8	10.4
Petaluma	90	80	9	9	10.0	11.3	9.0
Santa Rosa	157	129	11	5	7.0	3.9	9.0
Grass Valley	67	73	12	9	17.9	12.3	16.0
Central California:							
San Francisco	7,259	6,940	954	947	13.1	13.6	12.8
Alameda	290	290	38	26	12.7	9.0	10.0
Berkeley	493	435	40	25	8.1	5.7	7.9
Oakland	2,169	2,115	260	222	12.0	10.5	10.8
Richmond	160	142	14	12	8.8	8.5	8.3
San Rafael	92	80	9	10	9.8	12.5	†12.1
Monterey	73	62	4	9	5.5	14.5	12.8
Salinas	55	58	7	7	12.7	12.1	10.6
San Luis Obispo.....	119	101	14	11	11.8	10.9	†13.6
Palo Alto	30	28	1		3.3		5.1
San Jose	463	461	52	50	11.2	10.8	12.5
Santa Cruz	190	181	16	10	8.4	5.5	8.7
Watsonville	76	81	12	7	15.8	8.6	13.8
Fresno	377	430	61	42	17.0	9.8	12.2
Bakersfield	286		50		20.6		*20.6
Sacramento	997	1,006	144	151	14.4	14.2	14.0
Stockton	725	564	93	73	12.8	12.9	15.2
Vallejo	122	159	15	11	12.3	6.9	9.7
Modesto	145	109	14	12	9.6	11.0	†10.1
Southern California:							
Los Angeles	5,853	5,644	1,010	990	17.3	17.5	17.6
Alhambra	87		7		8.0		*8.0
Long Beach	431	422	24	26	5.6	6.2	7.7
Pasadena	496	458	67	66	13.5	14.4	16.5
Pomona	169	144	15	19	8.9	13.2	6.1
Santa Monica	187	189	13	15	7.0	7.9	7.0
Riverside	217	210	30	40	13.8	18.3	18.7
San Bernardino	358	352	92	91	27.7	25.9	25.5
San Diego	1,003	946	150	127	15.0	13.4	15.3
Santa Barbara	232	260	25	31	10.8	11.9	13.3
Rest of State.....	15,205	15,012	2,245	2,244	14.8	14.9	14.8

*Per cent for single year, 1915.

†Average for three years, 1913 to 1915.

‡Average for four years, 1912 to 1915.

In the thirty-four freeholders' charter cities in 1915 the deaths from tuberculosis numbered 3,306, or 13.9 per cent, and in the thirty-two chartered cities in 1914 the deaths from this disease totaled 3,076, or 13.7 per cent. In the state outside cities the deaths from tuberculosis were 2,245, or 14.8 per cent of all, in 1915 and 2,244, or 14.9 per cent, in 1914.

For chartered cities as a class the per cent of deaths from tuberculosis was slightly greater in 1915 than 1914, 13.9 against 13.7, while for the state outside these cities the per cent was a shade less in 1915 than in 1914, 14.8 against 14.9. However, the annual average per cent of deaths from tuberculosis in 1911 to 1915 was somewhat less for chartered cities, 14.0, than for all the rest of the state, 14.8.

From the annual average per cent for 1911 to 1915 it appears that the mortality from tuberculosis was relatively greatest in the following cities: San Bernardino, 25.5; Bakersfield (1915 alone), 20.6; Riverside, 18.7; Los Angeles, 17.6; Pasadena, 16.5; Grass Valley, 16.0; San Diego, 15.3; and Stockton, 15.2.

On the other hand, the annual average per cent of deaths from tuberculosis in the five-year period was only 5.1 for Palo Alto, 6.1 for Pomona, 7.0 for Santa Monica, 7.7 for Long Beach, 7.9 for Berkeley, 8.0 for Alhambra (1915 alone), 8.3 for Richmond, 8.7 for Santa Cruz, 9.0 for both Petaluma and Santa Rosa, 9.7 for Vallejo, 10.0 for Alameda, 10.1 for Modesto (four years), 10.4 for Napa, 10.6 for Salinas, and 10.8 for Oakland.

Length of Residence (Geographic Divisions).—The heavy mortality from tuberculosis in California is due largely to the immigration of people so badly afflicted with this disease that they can not recover, even under the most favorable climatic conditions, though they may lengthen their lives somewhat by coming to this land of sunshine. For it appears that many who died of tuberculosis in California had been residents of the Golden State for only a short time. This is shown for the several geographic divisions in 1915 and 1914 in the following table, giving numbers and per cents by length of residence:

TABLE 9.—Deaths from Tuberculosis Classified by Length of Residence in California, with Per Cents, for Geographic Divisions: 1915 and 1914.

Geographic division	Total	Length of residence					Per cent				
		Under 1 year	1 to 9 years	10 years and over	Life	Un-known	Under 1 year	1 to 9 years	10 years and over	Life	Un-known
1915											
The State	5,551	378	1,568	1,602	1,542	461	6.8	28.2	28.9	27.8	8.3
Northern California	446	12	67	128	193	46	2.7	15.0	28.7	43.3	10.3
Coast counties	211	3	36	62	86	24	1.4	17.1	29.4	40.7	11.4
Interior counties	235	9	31	66	107	22	3.8	13.2	28.1	45.5	9.4
Central California	2,745	100	506	867	1,014	258	3.6	18.4	31.6	37.0	9.4
San Francisco	964	26	158	273	388	169	2.7	16.6	28.6	40.7	11.4
Other bay counties	596	22	110	208	229	32	3.7	18.4	34.1	38.4	5.4
Coast counties	309	13	49	96	139	13	4.2	15.9	30.7	45.0	4.2
Interior counties	886	39	189	206	258	104	4.4	21.3	33.4	29.1	11.8
Southern California	2,360	266	995	607	335	157	11.3	42.2	25.7	14.2	6.6
Los Angeles	1,593	168	718	416	188	103	10.5	45.1	26.1	11.8	6.5
Other counties	767	98	277	191	147	54	12.8	36.1	24.9	19.2	7.0
Northern and Central California	3,191	112	573	995	1,207	304	3.5	18.0	31.2	37.8	9.5
Coast counties	2,070	64	353	633	842	178	3.1	17.0	30.6	40.7	8.6
Interior counties	1,121	48	220	362	365	126	4.3	19.6	32.3	32.6	11.2
Metropolitan area	1,550	48	268	476	617	141	3.1	17.3	30.7	39.8	9.1
Rural counties	1,641	64	305	519	590	163	3.9	18.6	31.6	36.0	9.9
1914											
The State	5,320	427	1,500	1,544	1,435	414	8.0	28.2	29.0	27.0	7.8
Northern California	443	26	72	135	172	38	5.9	16.2	30.5	38.8	8.6
Coast counties	224	8	31	68	98	19	3.6	13.8	30.1	43.7	8.5
Interior counties	219	18	41	67	74	19	8.2	18.7	30.6	33.8	8.7
Central California	2,571	93	478	878	912	210	3.6	18.6	34.1	35.5	8.2
San Francisco	947	31	154	320	371	71	3.3	16.2	33.8	39.2	7.5
Other bay counties	534	13	101	189	206	25	2.4	18.9	35.4	38.6	4.7
Coast counties	292	8	56	85	132	11	2.7	19.2	29.1	45.2	3.8
Interior counties	798	41	167	284	203	103	5.2	20.9	35.6	25.4	12.9
Southern California	2,306	308	950	531	351	166	13.4	41.2	23.0	15.2	7.2
Los Angeles	1,575	204	676	368	222	107	12.9	42.9	23.4	14.1	6.7
Other counties	731	104	274	163	129	61	14.2	37.5	22.3	17.7	8.3
Northern and Central California	3,014	119	550	1,013	1,084	248	3.9	18.3	33.6	36.0	8.2
Coast counties	1,997	60	342	662	807	126	3.0	17.1	33.2	40.4	6.3
Interior counties	1,017	59	208	351	277	122	5.8	20.5	34.5	27.2	12.0
Metropolitan area	1,481	44	255	509	577	96	3.0	17.2	34.4	38.9	6.5
Rural counties	1,533	75	295	504	507	152	4.9	19.2	32.9	33.1	9.9

Analysis of the per cents in Table 9, for 1915 and 1914, is facilitated by the annual averages for 1906 to 1915 presented in the following tabular statement for selected geographic divisions:

Geographic division	Annual average per cent of deaths from tuberculosis: 1906 to 1915				
	Under 1 year	1 to 9 years	10 years and over	Life	Unknown
The State	9.2	24.6	26.0	28.7	11.5
Northern and Central California.....	3.7	14.7	29.9	38.1	13.6
Metropolitan area	3.1	13.5	28.7	40.4	14.3
San Francisco	3.0	11.8	26.5	40.4	18.3
Other bay counties.....	3.3	16.1	32.1	40.6	7.9
Rural counties	4.2	15.9	30.9	36.0	13.0
Southern California	17.0	38.5	20.5	15.4	8.6
Los Angeles	16.7	40.0	20.6	13.6	9.1
Other counties	17.5	35.5	20.4	19.1	7.5

It appears from Table 9 and the tabular statement presented herewith that the per cent of tuberculosis victims in California who were natives of the state, having been here for life, was only 27.8 in 1915 and 27.0 in 1914, against the average of 28.7 for 1906 to 1915. The per cents for those born elsewhere who were residents of ten years standing were 28.9 and 29.0 in 1915 and 1914 against the average of 26.0, while the per cent for those who had lived in California only from 1 to 9 years was 28.2 each of the last two years against the average of 24.6 for the ten-year period. The per cent of all deaths from tuberculosis occurring among persons who had been in the state less than a year was 6.8 in 1915 and 8.0 in 1914, as compared with the average of 9.2 for 1906 to 1915. The length of residence was unknown for 8.3 per cent of the tuberculosis victims in 1915 and for 7.8 per cent in 1914, against the annual average of 11.5 for the whole ten years last past.

Reference to the annual average per cents for 1906 to 1915 in the preceding tabular statement shows that the per cent of tuberculosis victims who were natives of the state was no less than 38.1 for northern and central California against merely 15.4 for the territory south of Tehachapi. The average per cent of tuberculosis victims born in the state was 40.4 for the metropolitan area as compared with 36.0 for the rural counties north of Tehachapi, being 40.4 for San Francisco alone and 40.6 for the group of other bay counties.

The average per cent of deaths from tuberculosis among residents of ten years' standing was 29.9 for the territory north of Tehachapi against only 20.5 for that to the south. The average per cent was 28.7 for the metropolitan area against 30.9 for the rural counties of northern and central California, and was 26.5 for the metropolis proper against 32.1 for the suburban counties.

In 1906 to 1915, by the annual averages, altogether 33.8 per cent of the deaths from tuberculosis in California as a whole occurred among residents of less than ten years standing, 24.6 per cent having lived here from 1 to 9 years and 9.2 per cent under 1 year.

The average per cent for residents of less than ten years standing is above the state average, 33.8, only for southern California, 55.5, the per cent being 56.7 for Los Angeles and 53.0 for the other counties

south of Tehachapi. On the other hand, the corresponding average per cent was only 18.4 for the territory north of Tehachapi, being only 16.6 for the metropolitan area against 20.1 for the rural counties and merely 14.8 for San Francisco against 19.4 for the suburban counties.

It seems, then, that in southern California, where from one-sixth to one-fifth of all deaths are from tuberculosis, considerably more than half of the tuberculosis victims thus succumbing had lived in the state less than ten years at the time of death. In fact, over one-sixth of all tubercular decedents south of Tehachapi had resided in California less than a year, the annual average per cent in 1906 to 1915 being 16.7 for Los Angeles and 17.5 for the other counties, or 17.0 for southern California as a whole.

Length of Residence (Cities).—Preceding figures on length of residence for geographic divisions in 1915 and 1914 are supplemented by those in the following table for the several chartered cities in contrast with the rest of the state, the cities being arranged according to geographic location. The absolute figures are shown for each of the thirty-four chartered cities in 1915 and the thirty-two in 1914, but the per cents have been calculated only for those cities reporting at least 25 deaths from tuberculosis in each year, respectively.

TABLE 10.—Deaths from Tuberculosis Classified by Length of Residence in California, with Per Cents, for Individual Cities and Rest of State: 1915 and 1914.

City	Total		Length of residence									
	1915	1914	1915					1914				
			Under 1 year	1 to 9 years	10 years and over	Life	Unknown	Under 1 year	1 to 9 years	10 years and over	Life	Unknown
Deaths.												
California	5,551	5,320	378	1,568	1,602	1,542	461	427	1,500	1,544	1,435	414
Freeholders' charter cities	3,306	3,076	209	944	991	900	253	239	879	927	829	202
Northern California:												
Eureka	23	19	1	2	11	9	—	1	1	7	9	1
Napa	8	4	—	3	1	2	2	—	—	1	2	1
Petaluma	9	9	1	2	1	5	—	1	2	—	5	1
Santa Rosa	11	5	1	2	2	4	2	—	—	1	4	—
Grass Valley	12	9	—	1	7	4	—	2	—	3	4	—
Central California:												
San Francisco	954	947	26	158	273	388	109	31	154	320	371	71
Alameda	38	26	1	4	16	15	2	1	3	13	8	1
Berkeley	40	25	7	3	15	15	—	2	3	13	7	—
Oakland	260	222	6	55	90	102	7	8	35	68	102	9
Richmond	14	12	—	6	6	2	—	—	5	5	2	—
San Rafael	9	10	—	1	3	4	1	1	1	3	4	1
Monterey	4	9	—	—	1	2	1	—	3	1	5	—
Salinas	7	7	—	—	4	3	—	—	2	1	4	—
San Luis Obispo	14	11	—	—	5	9	—	—	3	3	4	1
Palo Alto	1	—	—	1	—	—	—	—	—	—	—	—
San Jose	52	50	1	6	18	24	3	1	10	20	19	—
Santa Cruz	16	10	1	2	9	4	—	—	1	3	6	—
Watsonville	12	7	1	1	4	6	—	—	3	1	3	—
Fresno	64	42	4	8	27	22	3	6	12	12	9	3
Bakersfield	59	—	2	15	11	15	18	—	—	—	—	—
Sacramento	144	151	2	29	48	53	12	12	22	67	39	11
Stockton	93	73	5	11	29	27	21	1	15	27	20	10
Vallejo	15	11	1	2	2	9	1	1	1	4	4	1
Modesto	14	12	3	5	4	1	1	—	2	4	4	2
Southern California:												
Los Angeles	1,010	990	92	456	296	116	50	107	429	261	132	61
Alhambra	7	—	—	4	3	—	—	—	—	—	—	—
Long Beach	24	26	2	13	7	1	1	5	15	4	2	—
Pasadena	67	66	9	32	17	8	1	13	34	13	5	1
Pomona	15	19	2	9	—	4	—	4	6	3	6	—
Santa Monica	13	15	1	5	2	1	4	—	2	1	4	8
Riverside	30	40	3	10	13	3	1	3	22	4	7	4
San Bernardino	92	91	15	25	21	19	12	12	30	27	9	13
San Diego	150	127	21	67	36	23	3	23	53	31	18	2
Santa Barbara	25	31	1	6	9	9	—	4	10	6	11	—
Rest of State	2,245	2,244	169	624	611	633	208	188	621	617	606	212

*Not organized as charter city in 1914.

TABLE 10.—Deaths from Tuberculosis Classified by Length of Residence in California, with Per Cents, for Individual Cities and Rest of State: 1915 and 1914
—Concluded.

City	Total	Length of residence										
		1915					1914					
		Under 1 year	1 to 9 years	10 years and over	Life	Unknown	Under 1 year	1 to 9 years	10 years and over	Life	Unknown	
Per cents.												
California	100.0	100.0	6.8	28.2	28.9	27.8	8.3	8.0	28.2	29.0	27.0	7.8
Freeholders' charter cities	100.0	100.0	6.3	28.5	30.0	27.5	7.7	7.8	28.6	30.1	26.9	6.6
Northern and Central California:												
San Francisco	100.0	100.0	2.7	16.6	28.6	40.7	11.4	3.3	16.2	33.8	39.2	7.5
Alameda	100.0	100.0	2.6	10.5	42.1	39.5	5.3	3.9	11.5	50.0	30.8	3.8
Berkeley	100.0	100.0	17.5	7.5	37.5	37.5		8.0	12.0	52.0	28.0	
Oakland	100.0	100.0	2.3	21.2	34.6	39.2	2.7	3.6	15.8	30.6	45.9	4.1
San Jose	100.0	100.0	1.9	11.5	34.6	46.2	5.8	2.0	20.0	40.0	38.0	
Fresno	100.0	100.0	6.2	12.5	42.2	34.4	4.7	14.3	28.6	28.6	21.4	7.1
Bakersfield	100.0	*	3.4	25.4	18.7	25.4	27.1	*	*	*	*	*
Sacramento	100.0	100.0	1.4	20.2	33.3	36.8	8.3	7.9	14.6	44.4	25.8	7.3
Stockton	100.0	100.0	5.4	11.8	31.2	29.0	22.6	1.4	20.5	37.0	27.4	13.7
Southern California:												
Los Angeles	100.0	100.0	9.1	45.1	29.3	11.5	5.0	10.8	43.3	26.4	13.3	6.2
Long Beach	†	100.0	†	†	†	†	†	19.2	57.7	15.4	7.7	
Pasadena	100.0	100.0	13.4	47.8	25.4	11.9	1.5	19.7	51.5	19.7	7.6	1.5
Riverside	100.0	100.0	10.0	33.4	43.3	10.0	3.3	7.5	55.0	10.0	17.5	10.0
San Bernardino	100.0	100.0	16.3	27.2	22.8	20.7	13.0	13.2	32.9	29.7	9.9	14.3
San Diego	100.0	100.0	14.0	44.7	21.0	15.3	2.0	18.1	41.7	24.4	14.2	1.6
Santa Barbara	100.0	100.0	4.0	24.0	36.0	36.0		12.9	32.3	19.3	35.5	
Rest of State	100.0	100.0	7.5	27.8	27.2	28.2	9.3	8.4	27.7	27.5	27.0	9.4

*Not organized as charter city in 1914.

†Per cents not shown for totals less than 25.

As before, analysis of the per cents in this table for 1915 and 1914 is aided by the annual averages for 1911 to 1915 presented herewith for chartered cities in contrast with the rest of the state as well as for selected individual cities, *i. e.*, all having at least 25 deaths from tuberculosis in each of the five years last past, the averages for cities being limited to a five-year period because of the lack of figures for as long as ten years.

Table Showing Distribution of Tuberculosis Deaths According to Length of Residence in California.

City	Annual average per cent of deaths from tuberculosis: 1911 to 1915				
	Under 1 year	1 to 9 years	10 years and over	Life	Unknown
California	8.8	26.7	26.7	27.9	9.9
Freeholders' charter cities	8.7	27.6	27.4	27.1	9.2
Rest of State	8.9	25.5	25.7	29.0	10.9
Selected cities:					
Northern and Central California.					
San Francisco	3.3	14.3	28.6	39.8	14.0
Alameda	3.5	17.8	38.1	38.2	2.4
Berkeley	9.5	16.5	33.7	39.6	0.7
Oakland	3.0	18.9	30.2	42.8	5.1
San Jose	3.5	14.0	33.0	46.7	2.8
Fresno	9.0	22.9	31.3	29.7	7.1
Sacramento	4.7	16.5	28.8	31.6	18.4
Stockton	2.3	16.2	38.4	29.8	13.3
Southern California.					
Los Angeles	13.3	42.4	24.7	12.2	7.4
Pasadena	18.1	46.3	25.4	9.4	0.8
Riverside	15.2	39.8	25.2	15.2	4.6
San Bernardino	15.3	37.1	20.9	10.5	16.2
San Diego	20.2	38.7	25.3	12.8	3.0
Santa Barbara	6.0	24.8	23.7	42.7	2.8

It appears from this tabular statement that the distribution of tuberculosis deaths according to length of residence in California is not far from the same for chartered cities as for all the rest of the state. The annual average per cent in 1911 to 1915 for native Californians was 27.1 within cities against 29.0 outside them. For residents of ten years standing and over the average per cent was 27.4 for chartered cities against 25.7 for the rest of the state, while for residents of less than ten years standing the per cent was altogether 36.3 for cities as a class against 34.4 for the rural territory as a whole. For tuberculosis decedents who had lived in California less than a year the average per cent was almost exactly the same within cities, 8.7, as outside them, 8.9. The average per cent of unknown length of residence was 9.2 for chartered cities as compared with 10.9 for the rest of the state.

Several of the cities in southern California show a large proportion of deaths from tuberculosis among persons who had lived in California a comparatively short time. For residents of less than ten years standing the annual average per cent in 1911 to 1915 totaled as much as 64.4 for Pasadena, 58.9 for San Diego, 55.7 for Los Angeles, 55.0 for Riverside, and 52.4 for San Bernardino.

Moreover, the annual average per cent of tuberculosis victims who had lived in California less than a year was very high in cities of southern California, as follows: San Diego, 20.2; Pasadena, 18.1; San Bernardino, 15.3; Riverside, 15.2; and Los Angeles, 13.3.

Southern California.—In fact, many who died of tuberculosis in southern California cities or in the whole territory south of Tehachapi had lived in the state only a few months. This appears clearly from the following table giving numbers and per cents by length of residence in months for southern California in 1915 and 1914:

TABLE 11.—Deaths from Tuberculosis Classified by Length of Residence (In Months), with Per Cents, for Southern California: 1915 and 1914.

Geographic division	Length of residence									
	Total under 1 year		Under 1 month		1 to 2 months		3 to 5 months		6 to 11 months	
	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914
Numbers.										
Southern California	266	308	34	34	71	77	70	88	91	109
Los Angeles	168	204	22	20	47	48	44	61	55	75
Other counties	98	104	12	14	24	29	26	27	36	34
Per cents.										
Southern California	11.3	13.4	1.4	1.5	3.0	3.4	3.0	3.8	3.9	4.7
Los Angeles	10.5	12.9	1.4	1.3	2.9	3.0	2.8	3.9	3.4	4.7
Other counties	12.8	14.2	1.6	1.9	3.1	4.0	3.4	3.7	4.7	4.6

Table 11 for 1915 and 1914 may be supplemented by the annual average per cents for 1906 to 1915 presented in the following tabular statement:

Geographic division	Annual average per cent of deaths from tuberculosis: 1906 to 1915				
	Total under 1 year	Under 1 month	1 to 2 months	3 to 5 months	6 to 11 months
Southern California	17.0	2.0	4.4	4.8	5.8
Los Angeles	16.7	1.9	4.2	4.7	5.9
Other counties	17.5	2.2	4.9	4.9	5.5

From the supplementary annual average per cents for 1906 to 1915 it appears that of all who died of tuberculosis in southern California 2.0 per cent had been in the state less than a month, altogether 6.4 per cent less than three months, and altogether 11.2 per cent less than six months. Of all the tuberculosis victims in Los Angeles, an average of 10.8 per cent had resided in California less than half a year, the corresponding figure being 12.0 for the other counties south of Tehachapi.

Length of Residence (All Causes).—The following table indicates the extent to which tuberculosis is the cause of death among total decedents from all causes classified by length of residence in California, figures being presented for both 1915 and 1914 for the entire territory north of Tehachapi in contrast with southern California to the south.

TABLE 12.—Number and Per Cent of Deaths from Tuberculosis Among Decedents Classified by Length of Residence in California, for Territory North and South of Tehachapi: 1915 and 1914.

Length of residence	Deaths		Tuberculosis			
	1915	1914	Number		Per cent	
			1915	1914	1915	1914
California	30,026	37,537	5,551	5,320	14.2	14.2
Under 1 year.....	1,677	1,801	378	427	22.5	23.7
1 to 9 years.....	7,523	7,565	1,568	1,500	20.8	19.8
10 years and over.....	16,182	14,780	1,602	1,544	9.7	10.4
Life	9,906	10,073	1,542	1,435	15.6	14.2
Unknown	3,438	3,318	461	414	13.4	12.5
North of Tehachapi	24,904	24,046	3,191	3,014	12.8	12.5
Under 1 year.....	610	672	112	119	18.4	17.7
1 to 9 years.....	3,023	3,070	573	550	19.0	17.9
10 years and over.....	11,675	10,710	965	1,013	8.5	9.5
Life	7,280	7,353	1,207	1,084	16.6	14.7
Unknown	2,316	2,241	304	248	13.1	11.1
South of Tehachapi	14,122	13,491	2,360	2,306	16.7	17.1
Under 1 year.....	1,067	1,129	266	308	24.9	27.3
1 to 9 years.....	4,500	4,495	965	950	22.1	21.1
10 years and over.....	4,807	4,070	607	531	12.6	13.0
Life	2,626	2,720	835	351	12.8	12.9
Unknown	1,122	1,077	157	106	11.0	15.4

This table shows for the state as a whole, where the per cent of total deaths due to tuberculosis was 14.2 in both 1915 and 1914, that among decedents with a residence of less than a year the per cent for tuberculosis was 22.5 in 1915 and 23.7 in 1914 and that among decedents who had been in the state from one to nine years the per cent for tuberculosis was 20.8 in the last year covered and 19.8 in the year before. Hence, in California as a whole, the proportion of deaths from tuberculosis was nearly one-fourth among persons who had resided here under one year and about one-fifth among those who had lived here only one to nine years.

For the territory south of Tehachapi, with tuberculosis especially prevalent in the per cents of 16.7 and 17.1 for 1915 and 1914, respectively, the deaths from tuberculosis were as great as 24.9 and 27.3 per cent among decedents whose residence was under a year and 22.1 and 21.1 per cent in 1915 and 1914, respectively, among those who had lived in the state from one to nine years. Thus, in the territory south of Tehachapi, where tuberculosis prevails particularly, the proportion of all deaths from this one cause was fully one-fourth among decedents who had lived in California less than a year and over one-fifth among those with only one to nine years for their length of residence in this state.

Month of Death.—The following table gives the number and per cent of deaths occurring each month from tuberculosis for California as a whole in both 1915 and 1914, together with the corresponding per cents for 1911 to 1913 and annual average per cents for the five-year period, 1911 to 1915:

TABLE 13.—Number and Per Cent of Deaths Occurring Each Month from Tuberculosis, for California: 1915 and 1914.

Month	Deaths		Tuberculosis				Corresponding per cent			Annual average, 1911 to 1915.
	1915	1914	Number		Per cent		1913	1912	1911	
			1915	1914	1915	1914				
State totals -----	39,026	37,537	5,551	5,320	14.2	14.2	14.0	14.0	15.0	14.3
January -----	3,616	3,392	541	457	15.0	13.5	12.7	13.8	15.0	14.0
February -----	3,015	3,121	438	531	14.5	17.0	14.8	15.8	14.7	15.4
March -----	3,441	3,295	588	522	17.1	15.8	15.6	14.7	17.2	16.1
April -----	3,171	3,159	491	490	15.5	15.5	15.3	15.6	16.9	15.8
May -----	3,276	3,080	514	467	15.7	15.2	13.7	16.3	17.9	15.8
June -----	3,060	3,073	443	467	14.5	15.2	14.8	13.3	15.2	14.6
July -----	3,016	2,913	429	402	14.2	13.8	13.5	12.9	15.4	14.0
August -----	3,006	2,827	392	379	13.0	12.3	12.8	13.8	14.0	13.2
September -----	2,927	2,817	398	369	13.6	13.1	14.4	11.9	14.9	13.6
October -----	3,184	2,931	405	382	12.7	13.0	14.3	11.6	12.8	12.9
November -----	3,425	3,213	423	391	12.4	12.2	13.6	13.5	12.6	12.9
December -----	3,980	3,716	489	493	12.6	13.3	12.9	13.9	13.6	13.3

It appears from Table 13 that the per cent of deaths from tuberculosis was highest for March (17.1) in 1915, for February (17.0) in 1914, for March (15.6) in 1913, and for May (16.3 and 17.9) in both 1912 and 1911. From the annual average per cents for the five years, 1911 to 1915, it seems that the period of greatest mortality from tuberculosis extends over the months of February, March, April and May, while the time when deaths from this disease are relatively least numerous covers generally the months of August, September, October, and November. The high mortality from tuberculosis in California through the spring season may be ascribed in part to deaths occurring at this time among consumptives who came from the East in the autumn or winter only to succumb finally to their dread malady after living in this mild climate only a few months.

The statistics presented give only a minimum statement of the extent to which the general death rate of California is swollen by the deaths of persons who were stricken with tuberculosis elsewhere, and who merely came here in the hope of recovering, or with the expectation of lengthening their lives somewhat in the glorious climate of the Golden State. The figures cover only the deaths that occur among these recent residents, in many cases very soon after their arrival in this land of sunshine. No data are available to tell what proportion of deaths from tuberculosis among native Californians and old-time residents are due in some degree to imported infection by the presence here of sick people from other places. It is quite evident, however, that the death rate of California is swollen somewhat by the unhealthfulness, not of this state, but of other states, being increased, in fact, by the wide fame of California as a curative health resort. For the leading single cause of death the state is one which finds most of its victims among newcomers seeking restored health and finding longer, happier life in the balmy atmosphere of California. People come to California to save or lengthen lives surely doomed elsewhere.

DEATHS BY SEX, RACE, NATIVITY AND AGE PERIODS.

Sex.—The proportion of the sexes among decedents is given in the following table for the several geographic divisions in 1915 and 1914, both numbers and per cents being shown:

TABLE 14.—Deaths Classified by Sex, with Per Cents, for Geographic Divisions: 1915 and 1914.

Geographic division	Deaths						Per cent male		Per cent female	
	Total		Male		Female		1915	1914	1915	1914
	1915	1914	1915	1914	1915	1914				
The State	39,026	37,587	23,871	23,038	15,155	14,499	61.2	61.4	38.8	38.6
Northern California	4,101	3,967	2,746	2,604	1,355	1,353	67.0	65.8	33.0	34.2
Coast counties	2,068	2,014	1,380	1,329	708	685	66.1	66.0	33.9	34.0
Interior counties	2,013	1,943	1,366	1,275	647	668	67.9	65.6	32.1	34.4
Central California	20,803	20,089	12,838	12,476	7,965	7,613	61.7	62.1	38.3	37.9
San Francisco	7,259	6,940	4,496	4,390	2,761	2,560	62.0	63.1	38.0	36.9
Other bay counties	4,708	4,567	2,978	2,636	2,028	1,940	56.9	57.6	43.1	42.4
Coast counties	2,610	2,472	1,570	1,489	1,040	963	60.2	60.2	39.8	39.8
Interior counties	6,228	6,101	4,092	3,971	2,136	2,130	65.7	65.1	34.3	34.9
Southern California	14,122	13,491	8,287	7,968	5,835	5,533	58.7	59.0	41.3	41.0
Los Angeles	9,590	9,088	5,543	5,206	4,047	3,882	57.8	57.6	42.2	42.4
Other counties	4,532	4,433	2,744	2,752	1,788	1,701	60.5	61.8	39.5	38.2
Northern and Central California	24,904	24,046	15,584	15,090	9,320	8,966	62.6	62.7	37.4	37.3
Coast counties	16,663	16,002	10,126	9,834	6,537	6,168	60.8	61.5	39.2	38.5
Interior counties	8,241	8,044	5,458	5,246	2,783	2,798	66.2	65.2	33.8	34.8
Metropolitan area	11,965	11,516	7,176	7,016	4,789	4,500	60.0	60.9	40.0	39.1
Rural counties	12,939	12,530	8,406	8,064	4,531	4,466	65.0	64.4	35.0	35.6

Table 14 shows that of 39,026 persons who died in California in 1915, altogether 23,871 or 61.2 per cent were male, and 15,155 or 38.8 per cent were female. Similarly, among the 37,537 decedents in 1914, the males were 23,038 or 61.4 per cent, and the females were 14,499 or 38.6 per cent.

For 1906 to 1915, the annual average per cent male was 62.0 and the per cent female was 38.0. Through the ten years the per cent male ranged as follows: 62.0 (1906), 63.2, 62.2, 62.4, 62.3, 62.0, 61.7, 61.7 again, 61.4, and 61.2 (1915). The proportion of males among decedents has thus decreased somewhat since 1906, especially in the most recent years.

In both 1915 and 1914 the per cent male was highest for northern California, and next for central California, the proportion of males being considerably greater each year for northern and central California, separately or together, than for the territory south of Tehachapi.

The per cents male were highest in general among minor geographic divisions for the interior counties of northern California, the coast counties of northern California, and the interior counties of central California, in the order in which named. The per cent was lowest in 1915 for the bay counties other than San Francisco, and next for Los

Angeles, but in 1914 the minimum per cent was exactly the same for each of the two minor geographic divisions just mentioned.

The per cents male were much less for the metropolitan area than for the rural counties north of Tehachapi, but were much greater for San Francisco than for the suburban counties, the latter group showing minimum per cents male in each of the last two years.

Sex and Cause of Death.—The following table gives, for California as a whole in both 1915 and 1914, the deaths from certain principal causes classified by sex, with the per cents male and female:

TABLE 15.—Deaths from Certain Principal Causes Classified by Sex, with Per Cents, for California: 1915 and 1914.

Cause of death	Deaths				Female		Per cent male		Per cent female	
	Total		Male							
	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914
All causes	39,026	37,537	23,871	23,038	15,155	14,499	61.2	61.4	38.8	38.6
Typhoid fever	276	376	192	238	84	118	69.6	68.6	30.4	31.4
Malarial fever	45	70	29	41	16	29	61.4	58.6	38.6	41.4
Smallpox	3	1	1		2	1	33.3		66.7	100.0
Measles	132	153	72	77	60	76	54.5	50.3	45.5	49.7
Scarlet fever	53	90	27	54	26	36	50.9	60.0	49.1	40.0
Whooping-cough	124	306	48	144	76	162	38.7	47.1	61.3	52.9
Diphtheria and croup	310	268	151	137	139	131	48.7	51.1	51.3	48.9
Influenza	181	138	96	71	85	67	53.0	51.4	47.0	48.6
Plague	1		1				100.0			
Other epidemic diseases	116	132	72	76	44	56	62.1	57.6	37.9	42.4
Tuberculosis of lungs	4,732	4,529	3,290	3,631	1,532	1,496	67.3	66.9	32.7	33.1
Tuberculosis of other organs	799	701	445	461	354	327	55.7	58.7	44.3	41.3
Cancer	2,776	2,687	1,271	1,273	1,505	1,414	45.8	47.4	54.2	52.6
Other general diseases	1,645	1,301	970	945	675	646	59.0	59.4	41.0	40.6
Meningitis	273	331	138	160	115	132	57.9	60.1	42.1	39.9
Other diseases of nervous system	3,151	3,239	1,801	1,922	1,350	1,317	57.2	59.3	42.8	40.7
Diseases of circulatory system	7,251	6,397	4,453	3,942	2,798	2,455	61.4	61.6	38.6	38.4
Pneumonia and broncho-pneumonia	3,063	2,677	1,884	1,615	1,179	1,062	61.5	60.3	38.5	39.7
Other diseases of respiratory system	728	786	385	449	343	337	52.9	57.1	47.1	42.9
Diarrhea and enteritis, under 2 years	795	889	449	502	346	387	56.5	58.5	43.5	48.5
Diarrhea and enteritis, 2 years and over	415	352	235	106	180	154	56.6	50.3	43.4	49.7
Other diseases of digestive system	1,949	1,932	1,192	1,173	757	739	61.2	60.7	38.8	39.3
Bright's disease and nephritis	2,684	2,446	1,713	1,527	971	919	63.8	62.4	36.2	37.6
Childbirth	356	314			356	314			100.0	100.0
Diseases of early infancy	1,478	1,454	892	828	616	626	58.3	56.9	41.7	43.1
Suicide	1,083	912	868	771	167	141	83.0	84.5	16.1	15.5
Other violence	3,110	3,076	2,491	2,476	619	600	80.1	80.5	19.9	19.5
All other causes	1,525	1,570	805	865	720	705	52.8	55.1	47.2	44.9

This table shows that in both 1915 and 1914 the per cents male were highest for deaths from the following important causes: Suicide, 83.9 and 84.5; other violence, 80.1 and 80.5; typhoid fever, 69.6 and 68.6; tuberculosis of the lungs, 67.3 and 66.9; Bright's disease and nephritis, 63.8 and 62.4; and diseases of the circulatory system, 61.4 and 61.6.

On the other hand, except of course for deaths from childbirth, the per cent female was notably high each year only for whooping cough, 61.3 and 52.9; cancer, 54.2 and 52.6; diphtheria and croup, 51.3 and 48.9; measles, 45.5 and 49.7; scarlet fever, 49.1 and 40.0; and influenza, 47.0 and 48.6.

Race.—The race distribution of persons dying in the several geographic divisions in 1915 and 1914 is given in the following table, together with the per cent white among decedents:

TABLE 16.—Deaths Classified by Race, with Per Cent White, for Geographic Divisions: 1915 and 1914.

Geographic division	Deaths						Per cent white
	Total	White	Negro	Indian	Chinese	Japanese	
1915.							
The State	39,026	36,890	583	139	751	663	94.5
Northern California	4,101	3,895	22	76	69	39	95.0
Coast counties	2,088	2,020	4	31	16	14	96.7
Interior counties	2,013	1,875	18	42	53	25	93.1
Central California	20,803	19,537	212	39	612	373	93.9
San Francisco	7,279	6,822	54	1	288	74	94.3
Other bay counties	4,706	4,477	92	7	86	41	95.1
Coast counties	2,610	2,507	13	4	36	50	96.1
Interior counties	6,228	5,711	83	27	202	205	91.7
Southern California	14,122	13,458	319	24	70	251	95.3
Los Angeles	9,590	9,068	263	5	41	193	94.8
Other counties	4,532	4,370	56	19	29	58	96.4
Northern and Central California	24,904	23,432	264	115	681	412	91.1
Coast counties	16,663	15,816	163	46	26	182	95.1
Interior counties	8,241	7,586	101	69	255	230	92.1
Metropolitan area	11,965	11,319	146	8	374	118	91.6
Rural counties	12,939	12,113	118	107	307	294	93.6
1914.							
The State	37,537	35,513	569	170	657	628	94.6
Northern California	3,957	3,726	19	98	79	35	94.2
Coast counties	2,014	1,934	3	3	24	10	96.0
Interior counties	1,943	1,792	16	55	55	25	92.2
Central California	20,069	18,867	272	44	502	401	93.9
San Francisco	6,940	6,570	57		252	61	94.7
Other bay counties	4,576	4,372	89	3	66	46	95.5
Coast counties	2,472	2,344	19	4	30	75	94.8
Interior counties	6,101	5,581	107	37	154	222	91.5
Southern California	13,191	12,920	278	28	76	189	95.8
Los Angeles	9,038	8,616	218	1	53	150	95.3
Other counties	4,453	4,301	60	27	23	39	96.7
Northern and Central California	24,046	22,593	291	142	581	439	94.0
Coast counties	16,002	15,220	168	50	372	192	95.1
Interior counties	8,044	7,373	123	92	209	247	91.7
Metropolitan area	11,516	10,942	146	3	318	107	95.0
Rural counties	12,530	11,651	145	139	263	332	93.0

It appears from Table 16 that in 1915 the white decedents numbered 36,890, or 94.5 per cent; the Chinese, 751; the Japanese, 663; the Negroes, 583; and the Indians, 139. For 1914 the figures were as follows: White, 35,513, or 94.6 per cent; Chinese, 657; Japanese, 628; Negro, 569; and Indian, 170.

The per cent white for California as a whole was virtually the same in 1915 and 1914, 94.5 and 94.6, respectively, as the annual average per cent of 94.6 for the ten year period 1906 to 1915. The per cent white was as follows through the ten years: 94.5 (1906), 94.3, 94.8, 94.6, 94.7 (1910 and 1911), 94.6 (1912, 1913 and 1914), and 94.5 (1915).

In both 1915 and 1914 the per cents white were higher for southern California than for the territory north of Tehachapi, being lowest among main geographic divisions for central California.

Among minor geographic divisions the per cents white were above the state averages for both 1915 and 1914 in the following cases: Southern California outside Los Angeles, coast counties of northern California, bay counties except San Francisco, coast counties of central California, and Los Angeles. The per cent white was also slightly above the state average in 1914 alone for San Francisco.

The per cent white was somewhat greater each year for the metropolitan area than for the rural counties north of Tehachapi, but was slightly less for San Francisco alone than for the group of suburban counties.

Each year the deaths among Chinese occurred mainly in San Francisco and suburbs and in the interior counties of central California. The deaths of Japanese occurred mainly in the interior counties of central California and also in Los Angeles. The number of negro decedents was particularly great only for Los Angeles in both years. More than half the Indian deaths each year were in northern California.

Race and Cause of Death.—The following table shows for California in 1915 and 1914 the deaths from certain principal causes classified by race, as well as the per cent white in each case:

TABLE 17.—Deaths from Certain Principal Causes Classified by Race, with Per Cent White, for California: 1915 and 1914.

Cause of death	Deaths						Per cent white
	Total	White	Negro	Indian	Chinese	Japanese	
1915.							
All causes	39,026	36,800	583	139	751	663	94.5
Typhoid fever	276	254	3	3	6	10	92.0
Malarial fever	45	41		1	1	2	91.1
Smallpox	3	3					100.0
Measles	132	126	1	1	2	2	95.5
Scarlet fever	53	51	1		1		96.2
Whooping-cough	124	117	1	1		5	94.4
Diphtheria and croup	310	308	1			1	96.4
Influenza	181	177	1			3	97.8
Plague	1	1					100.0
Other epidemic diseases	116	100	2		3	2	94.0
Tuberculosis of lungs	4,752	4,326	136	31	180	79	91.0
Tuberculosis of other organs	790	714	18	8	13	46	86.4
Cancer	2,776	2,663	23	7	33	20	97.0
Other general diseases	1,645	1,569	22	2	34	18	96.4
Meningitis	273	249	1	1	3	19	91.2
Other diseases of nervous system	3,151	3,058	37	5	40	11	97.0
Diseases of circulatory system	7,251	6,976	97	8	148	22	96.2
Pneumonia and broncho-pneumonia	3,063	2,887	46	13	54	63	94.3
Other diseases of respiratory system	728	693	4	4	15	12	93.2
Diarrhea and enteritis, under 2 years	795	714	6	2	9	64	86.8
Diarrhea and enteritis, 2 years and over	415	394	5	1	4	11	94.9
Other diseases of digestive system	1,949	1,835	31	6	37	40	94.2
Bright's disease and nephritis	2,661	2,553	45	8	60	18	95.1
Childbirth	356	321	7	6	1	21	90.2
Diseases of early infancy	1,478	1,364	24	5	13	72	92.3
Suicide	1,035	984	6	2	19	24	95.1
Other violence	3,110	2,918	44	17	58	73	93.8
All other causes	1,525	1,455	21	7	17	25	95.4
1914.							
All causes	37,537	35,513	569	170	657	628	94.6
Typhoid fever	376	349	8	1	3	15	92.8
Malarial fever	70	60	3		3	4	85.7
Smallpox	1	1					100.0
Measles	153	150			1	2	98.0
Scarlet fever	90	89				1	98.9
Whooping-cough	306	294	2		1	9	96.1
Diphtheria and croup	268	259	1		4	4	96.6
Influenza	138	129	3	1	3	2	93.5
Other epidemic diseases	132	130			1	1	98.5
Tuberculosis of lungs	4,329	4,130	130	47	164	58	91.2
Tuberculosis of other organs	791	721	18	8	10	34	91.2
Cancer	2,687	2,635	15	4	22	11	96.1
Other general diseases	1,591	1,526	21	5	22	17	95.9
Meningitis	331	299	6		2	24	90.3
Other diseases of nervous system	3,239	3,139	37	6	45	12	96.9
Diseases of circulatory system	6,397	6,158	86	12	110	31	96.3
Pneumonia and broncho-pneumonia	2,677	2,492	42	25	49	69	93.1
Other diseases of respiratory system	786	735	12	2	23	14	93.5
Diarrhea and enteritis, under 2 years	889	806	15	3	3	62	90.7
Diarrhea and enteritis, 2 years and over	352	336	5	1	4	6	95.5
Other diseases of digestive system	1,932	1,812	33	12	35	40	93.8
Bright's disease and nephritis	2,446	2,331	39	6	58	12	95.3
Childbirth	344	323	3	3	1	14	93.9
Diseases of early infancy	1,451	1,360	19	1	10	64	93.5
Suicide	912	845	8	4	24	31	92.7
Other violence	3,076	2,894	44	19	44	75	94.1
All other causes	1,570	1,510	19	10	15	16	96.2

The per cents white were above the general averages of 94.5 and 94.6 for 1915 and 1914, respectively, for deaths from the following important causes: Diphtheria and croup, 99.4 and 96.6; cancer, 97.0 and 98.1; diseases of the nervous system, other than meningitis, 97.0 and 96.9; diseases of the circulatory system, 96.2 and 96.3; scarlet fever, 96.2 and 98.9; measles, 95.5 and 98.0; and Bright's disease and nephritis, 95.1 and 95.3.

The table shows, however, that the per cents white are very low indeed for typhoid fever, 92.0 and 92.8, as well as for tuberculosis, being 91.0 and 91.2 for the pulmonary form and 89.4 and 91.2 for all other kinds.

From further analysis of the figures in the table it appears that the proportion of Caucasians among all dying from typhoid fever is relatively small, because many deaths from this disease occur among the Japanese, and that the proportion of Caucasians among tuberculosis victims is relatively small, because the "great white plague" is especially fatal among Chinese and Negroes.

Thus, the per cents Japanese among all dying from typhoid fever were no less than 3.6 in 1915 (10 among 276) and 4.0 in 1914 (15 among 376), while the per cent Japanese among all decedents was only 1.7 each year.

The Chinese and Negroes are likewise strongly represented among the victims of pulmonary tuberculosis in California, the Chinese who died from tuberculosis of the lungs numbering 180 in 1915 and 164 in 1914, and the Negroes numbering, respectively, 136 and 130. While the per cents Chinese were only 1.9 in 1915 and 1.7 in 1914 among all decedents in California, the per cents Chinese were no less than 3.8 and 3.6 for deaths from tuberculosis of the lungs. Similarly, while the per cent Negro was only 1.5 each year among all decedents, the per cent Negro was as great as 2.9 in 1915 and 2.1 in 1914 among those dying from pulmonary tuberculosis alone. For tuberculosis of other organs than the lungs the per cents in 1915 and 1914, respectively, were notably high for Japanese, 5.8 and 4.3, as well as for Negroes, 2.2 and 2.3.

Nativity of White Decedents.—In further analysis of deaths by race, the nativity of white decedents is worth considering. Accordingly, Table 18, which follows, has been prepared classifying white decedents as born in California, born in other states, foreign born, or nativity unknown.

TABLE 18.—White Decedents Classified by Nativity, with Per Cents, for Geographic Divisions: 1915 and 1914.

Geographic division	White decedents					Per cent			
	Total	Born in California	Born in other states	Foreign born	Unknown	Born in California	Born in other states	Foreign born	Unknown
1915.									
The State	36,890	9,235	14,905	11,761	989	25.0	40.4	31.9	2.7
Northern California	3,895	1,077	1,544	1,156	118	27.7	30.6	29.7	3.0
Coast counties	2,020	546	742	681	51	27.0	36.8	33.7	2.5
Interior counties	1,875	531	802	475	67	28.3	42.8	25.3	3.6
Central California	19,537	5,721	6,148	7,174	494	29.3	31.5	36.7	2.5
San Francisco	6,842	2,021	1,581	3,036	204	29.5	23.1	44.4	3.0
Other bay counties	4,477	1,268	1,494	1,649	66	28.3	33.4	30.8	1.5
Coast counties	2,507	721	909	838	39	28.8	36.3	33.4	1.5
Interior counties	5,711	1,711	2,164	1,651	185	30.0	37.9	28.9	3.2
Southern California	13,458	2,437	7,213	3,431	377	18.1	53.6	25.5	2.8
Los Angeles	9,088	1,466	5,072	2,341	209	16.1	55.8	25.8	2.3
Other counties	4,370	971	2,141	1,090	168	22.2	49.0	24.9	3.9
Northern and Central Cal.	23,432	6,798	7,692	8,330	612	29.0	32.8	35.6	2.6
Coast counties	15,846	4,556	4,726	6,204	360	28.7	29.8	39.2	2.3
Interior counties	7,586	2,242	2,966	2,126	252	29.6	39.1	28.0	3.3
Metropolitan area	11,319	3,289	3,075	4,685	270	29.0	27.2	41.4	2.4
Rural counties	12,113	3,509	4,617	3,645	342	29.0	38.1	30.1	2.8
1914.									
The State	35,513	9,412	13,962	11,177	972	26.5	39.3	31.5	2.7
Northern California	3,736	1,004	1,516	1,066	120	26.9	40.7	29.2	3.2
Coast counties	1,934	529	719	647	39	27.4	37.2	33.4	2.0
Interior counties	1,792	475	797	439	81	26.5	44.5	24.5	4.5
Central California	18,867	5,864	5,727	6,804	472	31.1	30.3	36.1	2.5
San Francisco	6,570	2,072	1,482	2,832	184	31.5	22.6	43.1	2.8
Other bay counties	4,372	1,348	1,334	1,614	76	30.8	30.5	36.9	1.8
Coast counties	2,344	705	836	770	33	30.1	35.7	32.8	1.4
Interior counties	5,581	1,739	2,075	1,588	179	31.2	37.2	28.4	3.2
Southern California	12,920	2,544	6,709	3,287	380	19.7	51.9	25.4	3.0
Los Angeles	8,616	1,544	4,647	2,205	220	17.9	53.9	25.6	2.6
Other counties	4,304	1,000	2,062	1,082	160	23.2	47.9	25.2	3.7
Northern and Central Cal.	22,593	6,868	7,243	7,890	592	30.4	32.1	34.9	2.6
Coast counties	15,220	4,654	4,371	5,863	332	30.6	28.7	38.5	2.2
Interior counties	7,373	2,214	2,872	2,027	260	30.0	39.0	27.5	3.5
Metropolitan area	10,942	3,420	2,816	4,446	260	31.3	25.7	40.6	2.4
Rural counties	11,651	3,448	4,427	3,444	332	29.6	38.0	29.6	2.8

Table 18 shows that of the 36,890 white decedents in 1915 and the 35,513 in 1914, those born in other states totaled 14,905 and 13,952; the foreign born numbered 11,761 and 11,177; the native Californians were 9,235 and 9,412; and the nativity was unknown for 989 in 1915 and 972 in 1914. The per cent distribution of white decedents by nativity was as follows for 1915 and 1914, respectively: Other states, 40.4 and 39.3; foreign countries, 31.9 and 31.5; California, 25.0 and 26.5; and unknown, 2.7 each year. In 1906 to 1915 the annual average per cents were as follows: Other American, 37.7; foreign, 31.8; Californian, 27.3; and unknown, 3.2.

It may be noted that the per cent of other Americans among white decedents in California increased considerably between 1906 and 1915 as follows: 34.9 (1906), 35.7, 35.9, 36.7, 37.6, 38.0, 39.2, 39.2 again, 39.3 and 40.4 (1915). The per cent foreign born remained quite stationary through the ten years, thus: 31.9 (1906), 32.0, 31.9, 32.2, 31.1, 32.4, 31.5, 31.2, 31.5, and 31.9 (1915). However, the per cent of native Californians among white decedents here decreased somewhat during the decade, as follows: 28.4 (1906 and 1907), 28.9, 28.1, 28.3, 26.6, 26.3, 26.5 (1913 and 1914), and 25.0 (1915). The per cent of unknown nativity also decreased in the ten-year period, thus: 4.8 (1906), 3.9, 3.3, 3.0 (1909 to 1912, inclusive), 3.1 and 2.7 (1914 and 1915).

The proportion of California decedents who were born in other states is very high indeed for the counties south of Tehachapi, especially Los Angeles, the per cents being 53.6 and 51.9 for southern California in 1915 and 1914 and no less than 55.8 and 53.9, respectively, for Los Angeles alone. On the other hand, the per cents born in other states were only 32.8 and 32.1 in 1915 and 1914 for the counties north of Tehachapi, being considerably greater each year for northern California than for central California. The per cents born elsewhere in the United States than California were much less for the metropolitan area than for the rural counties north of Tehachapi, and were also much less for San Francisco than for the other bay counties.

The proportion of foreign born decedents is particularly great only in central California, where the per cent foreign born was 36.7 in 1915 and 36.1 in 1914. The per cent foreign born was less than 30.0 each year for northern California and only about 25.0 for southern California. The per cent was 41.4 in 1915 and 40.6 in 1914 for the metropolitan area against 30.1 and 29.6 for the rural counties north of Tehachapi. The per cent of foreign born decedents in San Francisco was as great as 44.4 in 1915 and 43.1 in 1914 as compared with 36.8 and 36.9, respectively, for the group of suburban counties.

The per cent of native Californians among white decedents was greatest in both 1915 and 1914 for central California, 29.3 and 31.1, and next for northern California, 27.7 and 26.9, being merely 18.1 and

19.7 for southern California. The proportion of decedents born within the state was greater in general for the metropolitan area than for the rural counties north of Tehachapi, and was likewise slightly greater for San Francisco alone than for the other bay counties as a group.

Nativity and Cause of Death.—The following table gives numbers and per cent showing the nativity of Caucasians dying from certain principal causes in California in 1915 and 1914:

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TABLE 19.—White Decedents Dying from Certain Principal Causes, Classified by Nativity, with Per Cents, for California: 1915 and 1914.

Cause of death	White decedents				Per cent			
	Total	Born in California	Born in other states	Foreign born	Unknown	Born in California	Born in other states	Foreign born
1915.								
All causes.....	36,890	9,235	14,905	11,761	989	25.0	40.4	31.9
Typhoid fever.....	254	108	85	58	3	42.5	33.5	22.8
Malarial fever.....	41	14	19	6	2	34.2	46.3	14.6
Smallpox.....	3	2	1			66.7	33.3	
Measles.....	126	105	17	3		84.1	13.5	2.4
Scarlet fever.....	51	37	11	2	1	72.5	21.6	3.9
Whooping-cough.....	117	110	7			94.0	6.0	
Diphtheria and croup.....	308	245	46	14	3	79.6	14.9	4.5
Influenza.....	177	22	96	58	1	12.4	54.2	32.8
Plague.....	1							
Other epidemic diseases.....	109	41	44	24	1	37.6	40.4	22.0
Tuberculosis of lungs.....	4,326	1,037	1,768	1,434	87	24.0	40.9	33.1
Tuberculosis of other organs.....	714	393	197	123	1	55.1	27.6	17.2
Cancer.....	2,693	287	1,372	1,096	28	10.7	40.9	37.4
Other general diseases.....	1,569	371	676	472	50	23.6	43.1	30.1
Meningitis.....	249	153	56	88	2	61.4	22.5	15.3
Other diseases of nervous system.....	3,058	382	1,047	1,047	65	12.5	51.2	34.2
Diseases of circulatory system.....	6,976	599	3,388	2,815	174	8.6	48.6	40.3
Pneumonia and broncho-pneumonia.....	2,887	937	989	913	57	32.5	33.9	31.6
Other diseases of respiratory system.....	693	149	292	275	7	21.5	37.8	39.7
Diarrhea and enteritis, under 2 years.....	714	690	18	6		96.6	2.5	0.9
Diarrhea and enteritis, 2 years and over.....	394	110	169	106	9	27.9	42.9	26.9
Other diseases of digestive system.....	1,835	432	770	604	29	23.5	42.0	32.9
Bright's disease and nephritis.....	2,533	338	1,274	898	43	13.2	49.9	35.2
Childbirth.....	321	98	120	103		30.5	37.4	32.1
Diseases of early infancy.....	1,364	1,367	6	1		99.5	0.4	0.1
Suicide.....	138	344	350		152	14.0	35.0	35.6
Other violence.....	2,918	706	964	1,063	255	24.2	32.7	34.4
All other causes.....	1,455	373	601	401	20	25.6	45.4	27.6
1914.								
All causes.....	35,513	9,412	13,952	11,177	972	26.5	39.3	31.5
Typhoid fever.....	349	137	116	90	6	39.3	38.2	25.8

	60	20	22	15	3	33.3	36.7	25.0	5.0
Malarial fever	1	1				100.0			
Smallpox	150	129	16	5		96.0	10.7	3.3	
Measles	89	62	23	4		69.7	25.8	4.5	
Scarlet fever	294	274	16	4		93.2	5.4	1.4	
Whooping-cough	259	197	45	15	2	76.1	17.4	5.8	0.7
Diphtheria and croup	129	23	64	41	1	17.8	49.6	31.8	0.8
Other epidemic diseases	130	49	41	38	2	37.7	31.6	29.2	1.5
Influenza	4,130	949	1,705	1,397	79	23.0	41.3	33.8	1.9
Tuberculosis of lungs	721	373	217	125	6	51.8	30.1	17.3	0.8
Tuberculosis of other organs	2,685	992	1,278	1,039	26	11.1	48.5	39.4	1.0
Cancer	1,326	363	655	443	35	25.8	42.9	29.0	2.3
Other general diseases	299	187	64	43	5	62.5	21.4	14.4	1.7
Meningitis	3,139	370	1,646	1,054	63	12.0	52.4	33.6	2.0
Other diseases of nervous system	6,158	320	2,944	2,539	155	8.5	47.8	41.2	2.5
Diseases of circulatory system	2,492	995	724	712	61	39.9	29.1	28.6	2.4
Pneumonia and broncho-pneumonia	735	170	283	273	9	23.1	38.5	37.1	1.2
Other diseases of respiratory system	845	765	32	8	1	94.9	4.0	1.0	0.1
Diarrhea and enteritis, under 2 years	326	96	141	91	8	26.6	41.9	27.1	2.4
Diarrhea and enteritis, 2 years and over	1,812	428	734	612	38	23.6	40.5	33.8	2.1
Other diseases of digestive system	2,331	315	1,156	824	36	13.5	49.6	35.4	1.5
Bright's disease and nephritis	323	101	119	102	1	31.3	36.8	31.6	0.3
Childbirth	1,390	1,357	2	1		90.8	0.1	0.1	
Diseases of early infancy									
Suicide	845	115	291	299	140	13.6	34.4	35.4	16.6
Other violence	2,894	679	975	905	275	23.5	33.7	33.3	9.5
All other causes	1,510	409	643	438	20	27.1	42.6	24.0	1.3

The per cents born in California were above the general averages of 25.0 in 1915 and 26.5 in 1914 for deaths from the following important causes: Early infancy, 99.5 and 99.8; diarrhea and enteritis, under two years, 96.6 and 94.9; whooping cough, 94.0 and 93.2; measles, 84.1 and 86.0; diphtheria and croup, 79.6 and 76.1; scarlet fever, 72.5 and 69.7; meningitis, 61.4 and 62.5; tuberculosis other than pulmonary, 55.1 and 51.8; typhoid fever, 42.5 and 39.3; malarial fever, 34.2 and 33.3; pneumonia and broncho-pneumonia, 32.5 and 39.9; childbirth, 30.5 and 31.3; and diarrhea and enteritis, two years and over, 27.9 and 28.6.

The per cents born in other states were above the general averages of 40.4 and 39.3 in 1915 and 1914, respectively, for deaths from the following notable causes: Influenza, 54.2 and 49.6; diseases of the nervous system other than meningitis, 51.2 and 52.4; cancer, 50.9 and 48.5; Bright's disease and nephritis, 49.9 and 49.6; diseases of the circulatory system, 48.6 and 47.8; general diseases other than tuberculosis and cancer, 43.1 and 42.9; diarrhea and enteritis, 2 years and over, 42.9 and 41.9; tuberculosis of the lungs, 40.9 and 41.3; and diseases of the digestive system, except diarrhea, 42.0 and 40.5.

The per cents foreign born were above the general averages of 31.9 in 1915 and 31.5 in 1914 for deaths from the following causes: Diseases of the circulatory system, 40.3 and 41.2; cancer, 37.4 and 39.4; diseases of the respiratory system other than pneumonia, 39.7 and 37.1; Bright's disease and nephritis, 35.2 and 35.4; suicide, 35.6 and 35.4; other violence, 34.4 and 33.3; diseases of the nervous system other than meningitis, 34.2 and 33.6; diseases of the digestive system other than diarrhea, 32.9 and 33.8; and childbirth, 32.1 and 31.6.

The per cent of unknown nativity, 2.7 in both 1915 and 1914, is very high indeed for suicides, 15.4 and 16.6, as well as for deaths from other violence (drowning, accidental injuries, etc.), 8.7 and 9.5, respectively.

Age Periods.—The following table gives for the several geographic divisions in 1915 and 1914 the classification of decedents by nine selected age periods, representing in a rough way, infancy, childhood, youth, five productive ages, and old age:

TABLE 20.—Deaths Classified by Age Periods, for Geographic Divisions: 1915 and 1914.

Geographic division	All ages	Under 1 year	1 to 4 years	5 to 14 years	15 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 years and over
1915.										
The State	39,026	3,570	1,510	1,089	2,144	3,759	4,265	4,777	5,471	12,441
Northern California	4,101	292	143	113	226	335	431	442	528	1,591
Coast counties	2,068	135	75	52	117	158	200	235	276	831
Interior counties	2,013	157	68	61	109	177	222	207	252	760
Central California	20,803	1,877	853	575	1,066	1,966	2,329	2,736	3,067	6,284
San Francisco	7,259	538	295	203	326	764	934	1,151	1,146	1,902
Other bay counties	4,706	454	182	119	240	396	464	509	715	1,567
Coast counties	2,610	205	96	63	132	198	223	277	384	1,027
Interior counties	6,228	660	280	190	396	683	698	739	822	1,788
Southern California	14,122	1,401	514	401	822	1,438	1,505	1,599	1,876	4,596
Los Angeles	9,590	875	320	251	537	944	1,022	1,081	1,291	3,269
Other counties	4,532	526	194	150	285	494	483	518	585	1,297
Northern and Central California	24,904	2,169	996	688	1,322	2,321	2,760	3,178	3,595	7,875
Coast counties	16,663	1,332	648	437	815	1,511	1,840	2,232	2,521	5,327
Interior counties	8,241	837	348	251	507	810	920	946	1,074	2,548
Metropolitan area	11,965	992	477	322	566	1,160	1,396	1,720	1,861	3,469
Rural counties	12,939	1,177	519	366	756	1,161	1,362	1,458	1,734	4,406
1914.										
The State	37,537	3,964	1,628	1,081	2,125	3,770	4,249	4,579	5,019	11,122
Northern California	3,957	315	128	130	218	354	356	441	504	1,511
Coast counties	2,014	160	61	62	103	174	187	229	258	780
Interior counties	1,943	155	67	68	115	180	169	212	246	731
Central California	20,089	2,119	979	560	1,071	1,901	2,335	2,626	2,792	5,736
San Francisco	6,940	628	331	191	319	669	965	1,091	1,002	1,724
Other bay counties	4,576	511	256	124	251	369	454	515	636	1,400
Coast counties	2,472	237	96	57	139	174	236	266	345	922
Interior counties	6,101	743	296	188	362	669	680	754	779	1,630
Southern California	13,491	1,530	521	391	836	1,515	1,568	1,512	1,753	3,875
Los Angeles	9,038	953	322	232	527	1,030	1,061	1,049	1,188	2,676
Other counties	4,453	577	193	159	309	485	497	463	565	1,199
Northern and Central California	24,046	2,434	1,107	690	1,289	2,255	2,691	3,067	3,266	7,247
Coast counties	16,002	1,536	744	434	812	1,406	1,842	2,101	2,241	4,866
Interior counties	8,044	898	363	256	477	849	849	966	1,025	2,361
Metropolitan area	11,516	1,139	587	315	570	1,058	1,419	1,606	1,638	3,184
Rural counties	12,530	1,295	520	375	719	1,197	1,272	1,461	1,628	4,063

Table 20 shows that the 39,026 deaths in 1915 and the 37,537 in 1914, were distributed by age periods as follows: Under 1 year, 3,570 and 3,964; 1 to 4 years, 1,510 and 1,628; 5 to 14 years, 1,089 and 1,081; 15 to 24 years, 2,144 and 2,125; 25 to 34 years, 3,759 and 3,770; 35 to 44 years, 4,265 and 4,249; 45 to 54 years, 4,777 and 4,579; 55 to 64 years, 5,471 and 5,019; and 65 years and over, 12,441 and 11,122.

To facilitate comparisons between geographic divisions, the absolute numbers in the preceding table have been reduced to per cents, as given in Table 21.

TABLE 21.—Per Cent Distribution of Deaths, by Age Periods, for Geographic Divisions: 1915 and 1914.

Geographic division	Per cent of deaths															
	Under 1 year		1 to 4 years		5 to 14 years		15 to 24 years		25 to 34 years		35 to 44 years		45 to 54 years		55 to 64 years	
	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914
The state	9.2	10.6	3.9	4.3	2.8	2.9	5.5	5.7	9.6	10.0	10.9	11.3	12.2	12.2	14.0	13.4
Northern California	7.1	8.0	3.5	3.2	2.7	3.3	5.5	5.5	8.2	9.0	10.5	9.0	10.8	11.1	12.9	12.7
Coast counties	6.5	8.0	3.6	3.0	2.5	3.1	5.6	5.1	7.6	8.6	10.0	9.3	11.2	11.4	13.2	12.8
Interior counties	7.8	8.0	3.4	3.4	3.0	3.5	5.4	5.9	8.8	9.3	11.0	8.7	10.3	10.9	12.5	12.7
Central California	9.0	10.5	4.1	4.9	2.8	2.8	5.3	5.3	9.5	9.5	11.2	11.6	13.2	13.1	14.7	13.7
San Francisco	7.4	9.1	4.1	4.8	2.8	2.8	4.5	4.6	10.5	9.9	12.9	13.9	15.8	15.7	15.8	14.4
Other bay counties	9.6	11.2	3.9	5.6	2.5	2.7	5.1	5.5	8.4	8.1	9.9	9.9	12.1	11.2	15.2	13.9
Coast counties	7.9	9.6	3.7	3.9	2.4	2.3	5.1	5.6	7.4	7.0	8.9	9.5	10.6	10.8	14.7	14.0
Interior counties	10.9	12.2	4.5	4.8	3.0	3.1	6.4	5.9	10.2	11.0	11.2	11.1	11.9	12.4	13.2	12.8
Southern California	9.9	11.3	3.7	3.9	2.8	2.9	5.8	6.2	10.2	11.2	10.7	11.6	11.3	11.2	13.3	13.0
Los Angeles	9.1	10.5	3.3	3.6	2.6	2.6	5.6	5.8	9.8	11.4	10.7	11.7	11.3	11.6	13.5	13.2
Other counties	11.6	12.9	4.3	4.5	3.3	3.6	6.3	6.9	10.9	10.9	10.7	11.2	11.4	10.4	12.9	12.7
Northern and Central California	8.7	10.1	4.0	4.6	2.8	2.9	5.3	5.4	9.3	9.4	11.1	11.2	12.8	12.7	14.4	13.6
Coast counties	8.0	9.6	3.9	4.7	2.6	2.7	4.9	5.1	9.1	8.8	11.0	11.5	13.4	13.1	15.1	14.0
Interior counties	10.2	11.2	4.2	4.5	3.0	3.2	6.2	5.9	9.8	10.6	11.2	10.6	11.5	12.0	13.0	12.7
Metropolitan area	8.3	9.9	4.0	5.1	2.7	2.7	4.7	5.0	9.7	9.2	11.7	12.3	14.4	13.9	15.5	14.2
Rural counties	9.1	10.3	4.0	4.1	2.8	3.0	5.8	5.7	9.0	9.6	10.5	10.2	11.3	11.7	13.4	13.0

It appears from Table 21 that the per cent distribution of deaths in California was as follows for 1915 and 1914, respectively: Under 1 year, 9.2 and 10.6; 1 to 4 years, 3.9 and 4.3; 5 to 14 years, 2.8 and 2.9; 15 to 24 years, 5.5 and 5.7; 25 to 34 years, 9.6 and 10.0; 35 to 44 years, 10.9 and 11.3; 45 to 54 years, 12.2 each year; 55 to 64 years, 14.0 and 13.4; and 65 years and over, 31.9 and 29.6.

The annual average per cents for the whole ten years, 1906 to 1915, are limited to five age periods and stand as follows: Under 1 year, infancy, 10.9; 1 to 4 years, childhood, 4.3; 5 to 14 years, youth, 3.0; 15 to 44 years, productive ages, 52.6; and 65 years and over, old age, 29.3.

Data on deaths by the whole nine age periods shown in Tables 20 and 21 are available only for the five years last past, the annual average per cents for 1911 to 1915 being as follows: Under 1 year, 10.4; 1 to 4 years, 4.2; 5 to 14 years, 2.8; 15 to 24 years, 5.9; 25 to 34 years, 9.9; 35 to 44 years, 11.2; 45 to 54 years, 12.1; 55 to 64 years, 13.3; and 65 years and over, 30.2.

The per cent of total deaths occurring in infancy, under 1 year, decreased considerably between 1906 and 1915 as follows: 11.4 (1906), 11.0, 11.5, 11.2, 11.5, 10.4, 10.8, 11.2, 10.6, and 9.2 (1915). The per cent of deaths in childhood, 1 to 4 years, also decreased somewhat, thus: 4.5 (1906), 4.8, 4.4, 4.2, 4.7, 4.1, 4.4, 4.2, 4.3, and 3.9 (1915). Similarly, the per cent of deaths in youth, 5 to 14 years, decreased generally as follows: 3.4 (1906 and 1907), 3.5, 3.0, 2.7 (1910 to 1913, inclusive), 2.9, and 2.8 (1915).

However, the per cent of deaths in the productive ages, 15 to 64 years, varied comparatively little through the whole ten years, as appears from the following successive per cents: 52.3 (1906), 53.9, 52.7, 52.6, 52.3, 53.2, 52.2, 51.8, 52.6, and 52.2 (1915).

From data available for only the five years last past it appears that between 1911 and 1915 the proportion of all deaths decreased generally for the early productive ages of 15 to 44 years, remained stationary for the next productive age, 45 to 54 years, and increased notably for the final productive age, 55 to 64 years. The successive per cents in 1911 to 1915 decreased as follows: 15 to 24 years, 6.5, 6.1, 5.9, 5.7, and 5.5; 25 to 34 years, 10.1, 9.9, 9.8, 10.0, and 9.6; and 35 to 44 years, 11.6, 11.1, 10.9, 11.3, and 10.9. At the same time the per cent of deaths at the next age period, 45 to 54 years, remained stationary, thus: 11.9 (1911), 12.2, 12.1, and 12.2 (1914 and 1915). On the other hand, the per cent of deaths at the final productive age, 55 to 64 years, increased notably as follows: 13.1 (1911), 12.9, 13.1, 13.4, and 14.1.

The per cent of deaths at the period of old age, 65 years and over, increased considerably through the whole ten years as follows: 28.4 (1906), 26.9, 27.9, 29.0, 28.8, 29.6, 29.9, 30.1, 29.6, and 31.9 (1915).

Comparison of the per cent distribution of deaths in California by age periods between 1906 and 1915, or between 1911 and 1915 for certain age periods, indicates that there have been marked decreases in the proportion of deaths occurring in infancy, childhood, youth, and successive productive ages to 44 years, that the proportion of all deaths at 45 to 54 years remains stationary, and that there have been notable increases in the proportion of total deaths at 55 to 64 years as well as at 65 years and over.

It appears from Table 21, moreover, that the per cent of all deaths occurring at under 45 years was only 41.9 in 1915, and 44.8 in 1914, as compared with 44.7 in 1913, 45.0 in 1912, and 45.4 in 1911. Conversely, the per cent of total deaths at 45 years and over was as great as 58.1 in 1915 and 55.2 in 1914 against 55.3 in 1913, 55.0 in 1912, and 54.6 in 1911.

Reference to Table 21 indicates, as to geographic divisions, that the per cent of deaths in infancy, or the first year of life, was very low in both 1915 and 1914 for northern California, but was rather high each year for central as well as southern California. The per cents vary somewhat irregularly among minor geographic divisions, but were particularly high for the counties south of Tehachapi outside Los Angeles as well as for the interior counties of central California.

The same observations may also be made as to the proportion of deaths in childhood, 1 to 4 years, while for deaths in youth, 5 to 14 years, no very marked variations appear between the several geographic divisions.

With reference to deaths at successive productive ages covering the whole period from 15 to 64 years it seems that at the ages of 15 to 24, and 25 to 34, as well as at 35 to 44 in less degree, the per cent of deaths is relatively high for southern California, probably because of the great mortality from tuberculosis at these ages in this section. At 45 to 54 years as well as at 55 to 64 years, however, the per cent of deaths is particularly high for central California, especially San Francisco. In fact, for the whole period from 35 to 64 years the per cents are much greater for the metropolitan area than for the rural counties north of Tehachapi.

The proportion of deaths at the period of old age, 65 years and over, is especially great only for northern California among the main geographic divisions. However, among minor geographic divisions the per cent of deaths at 65 years and over was above the general average

each year not only for both the coast and interior counties of northern California, but also for the coast counties of central California and, in less degree, for the bay counties other than San Francisco.

Age and Cause of Death.—Tables 22 and 23 on the following pages show for California in 1915 and 1914 first, the number of deaths from certain principal causes classified by nine age periods, and second, the per cent distribution, by nine age periods, of the deaths from each of these causes.

TABLE 22.—Deaths from Certain Principal Causes, Classified by Age Periods, for California: 1915 and 1914.

Cause of death	Deaths									
	All ages	Under 1 year	1 to 4 years	5 to 14 years	15 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 years and over
1915.										
All causes	39,026	3,370	1,510	1,080	2,144	3,759	4,265	4,777	5,471	12,441
Typhoid fever	276		15	28	69	69	42	27	15	11
Malarial fever	45	6	8	5	5	1	2	3	3	12
Smallpox	3	1		1						
Measles	132	41	51	26	4	7	1		2	
Scarlet fever	33	3	22	22	2	2	2			
Whooping-cough	124	72	44	5						
Diphtheria and croup	310	15	141	126	10	9	3	5	1	3
Influenza	181	10	7	2	5	4	5	8	21	119
Plague	1				1					
Other epidemic diseases	116	21	11	2	3	8	10	16	18	26
Tuberculosis of lungs	4,732	30	32	102	730	1,215	1,047	732	428	336
Tuberculosis of other organs	799	66	188	97	109	119	88	58	45	29
Cancer	2,776	2	8	10	17	75	276	538	746	1,104
Other general diseases	1,645	97	42	73	88	159	238	208	337	353
Meningitis	273	65	39	28	28	16	18	16	13	14
Other diseases of nervous system	3,131	35	36	25	67	127	238	454	612	1,507
Diseases of circulatory system	7,251	7	28	71	118	251	443	843	1,332	4,158
Pneumonia and broncho-pneumonia	3,083	447	238	80	121	162	249	287	375	1,084
Other diseases of respiratory system	728	88	39	16	13	21	33	42	90	366
Diarrhea and enteritis, under two years	795	668	127							
Diarrhea and enteritis, two years and over	415		86	26	7	27	37	37	46	119
Other diseases of digestive system	1,949	73	60	92	129	183	260	324	300	518
Bright's disease and nephritis	2,684	11	24	33	52	136	235	406	541	1,226
Childbirth	356				97	166	93			
Diseases of early infancy	1,478	1,478								
Suicide	1,085									
Other violence	3,110	53	194	196	74	218	240	223	173	107
All other causes	1,525	281	25	12	23	80	79	86	100	839
1914.										
All causes	37,587	3,964	1,628	1,081	2,125	3,770	4,249	4,579	5,019	11,122
Typhoid fever	376	2	21	42	82	100	65	36	11	17
Malarial fever	70	6	2	6	1	9	7	13	10	17

Smallpox	1	91	21	4	8	1	1	1	1
Measles	153	32	42	4	2	1	1	1	1
Scarlet fever	90	2	118	14	2	1	1	1	1
Whooping-cough	206	172	115	11	5	3	1	2	2
Diphtheria and croup	208	9	122	115	11	5	3	1	2
Influenza	138	3	4	138	4	11	11	17	80
Other epidemic diseases	132	24	1	4	11	11	11	40	17
Tuberculosis of lungs	4,529	38	42	80	708	1,241	1,069	685	400
Tuberculosis of other organs	791	72	166	100	114	127	88	52	39
Cancer	2,687	8	7	14	91	236	567	686	1,080
Other general diseases	1,591	40	63	86	160	216	324	285	16
Meningitis	331	87	33	35	28	14	17	10	10
Other diseases of nervous system	8,239	53	43	52	141	322	441	619	1,524
Diseases of circulatory system	6,397	6	15	67	91	248	450	762	1,231
Pneumonia and broncho-pneumonia	2,677	583	287	74	76	157	238	248	278
Other diseases of respiratory system	786	68	49	15	24	35	66	90	383
Diarrhea and enteritis, under two years	889	741	148	15	24	35	66	90	383
Diarrhea and enteritis, two years and over	352		84	22	10	21	28	34	118
Other diseases of digestive system	1,462	68	58	75	133	196	253	336	506
Bright's disease and nephritis	2,446	16	20	28	68	145	250	376	1,091
Childbirth	344				106	150	89		
Diseases of early infancy	1,474	1,454							
Suicide	912				85	208	212	183	145
Other violence	3,076	54	13	294	387	615	532	426	295
All other causes	1,370	334	22	18	80	58	60	77	80
									84
									380
									891

TABLE 23.—Per Cent Distribution, by Age Periods, of Deaths from Certain Principal Causes, for California: 1915 and 1914.

Cause of death	Per cent of deaths													
	Under 1 year		1 to 4 years		5 to 14 years		15 to 24 years		25 to 34 years		35 to 44 years		45 to 54 years	
	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914
All causes	9.2	10.6	3.9	4.3	2.8	2.9	5.5	5.7	9.6	10.0	10.9	11.3	12.2	12.2
Typhoid fever	0.5	5.4	5.6	10.2	11.2	25.0	21.8	25.0	36.6	15.2	17.3	9.8	9.6	5.4
Malarial fever	13.3	8.6	17.8	2.9	11.1	8.6	11.1	1.4	2.2	12.8	4.4	10.0	6.7	17.1
Smallpox	33.4	100.0	33.3	33.3	33.3	33.3	33.3	2.6	5.3	2.0	0.8	1.1	0.7	1.5
Measles	31.1	30.9	38.6	59.5	19.7	13.7	3.0	4.5	3.8	2.2	3.8	1.1	0.7	1.5
Scarlet fever	5.6	2.2	41.5	46.7	41.5	43.3	3.8	4.5	3.8	2.2	3.8	1.1	0.7	1.5
Whooping-cough	58.1	56.2	35.5	38.6	4.0	4.6	3.2	4.1	2.9	1.9	1.0	1.1	1.6	0.4
Diphtheria and croup	4.8	3.4	45.5	45.5	40.7	42.9	3.2	2.2	2.2	2.9	2.8	6.5	4.4	5.8
Influenza	5.5	7.2	3.9	2.2	1.1	2.9	2.8	2.2	2.2	2.9	2.8	6.5	4.4	5.8
Plague	18.1	18.2	9.5	10.6	2.6	0.8	2.5	100.0	3.0	6.9	8.3	8.6	8.3	13.8
Other epidemic diseases	0.6	0.8	0.7	0.9	2.1	2.0	15.4	15.6	27.7	27.4	22.0	23.4	15.4	14.0
Tuberculosis of lungs	8.3	9.1	23.5	21.0	12.1	12.6	13.7	14.4	14.9	16.1	11.0	11.1	7.3	6.6
Tuberculosis of other organs	0.1	0.3	0.3	0.3	0.3	0.3	0.6	0.5	2.7	3.4	9.9	11.0	19.4	20.7
Cancer	5.9	7.1	2.5	2.5	4.4	4.0	5.3	5.4	9.7	10.0	14.5	13.6	16.3	19.1
Other general diseases	23.8	26.3	23.4	23.9	14.3	10.0	10.2	10.6	5.9	8.5	6.6	8.4	5.9	4.2
Meningitis	1.1	1.6	1.2	1.3	0.8	1.4	2.1	1.6	4.0	4.4	9.2	9.9	14.4	13.6
Other diseases of nervous system	0.1	0.1	0.4	0.2	1.0	1.1	1.6	1.4	3.5	3.9	6.1	7.0	11.6	11.0
Diseases of circulatory system	14.6	21.8	8.4	10.7	2.6	2.8	4.0	2.8	5.3	5.9	8.1	8.9	9.4	9.2
Pneumonia and broncho-pneumonia	12.1	11.2	5.3	6.2	2.2	1.9	1.8	3.1	2.9	3.3	4.5	4.5	5.8	8.4
Other diseases of respiratory system	84.0	83.4	15.0	16.6	6.3	6.2	1.7	2.8	6.5	6.0	6.9	7.4	8.9	9.7
Diarrhea and enteritis, under 2 years	3.8	3.5	3.1	8.0	4.7	3.9	6.6	6.9	9.9	10.1	13.3	13.1	16.6	17.4
Diarrhea and enteritis, 2 years and over	0.4	0.7	0.9	0.8	1.2	1.1	1.9	2.8	5.1	5.9	9.5	10.2	15.1	15.4
Other diseases of digestive system	30.7	23.9	6.3	6.2	1.7	2.8	6.5	6.0	6.9	7.4	8.9	9.7	11.1	10.5
Bright's disease and nephritis	3.5	3.1	8.0	4.7	3.9	6.6	6.9	9.9	10.1	13.3	13.1	16.6	17.4	15.4
Childbirth	0.4	0.7	0.9	0.8	1.2	1.1	1.9	2.8	5.1	5.9	9.5	10.2	15.1	15.4
Diseases of early infancy	100.0	100.0	27.3	30.5	46.6	26.1	25.9	28.3	23.2	23.2	23.2	23.2	21.5	20.1
Suicide	1.7	1.8	6.2	5.0	6.3	6.6	11.9	12.6	19.1	21.0	17.9	17.3	13.0	13.8
Other violence	18.4	21.3	1.6	1.4	0.8	1.1	1.5	1.9	5.3	3.7	5.2	3.8	5.6	4.9
All other causes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

From Table 23, giving the per cent distribution, it appears that the per cents of deaths in infancy, or the first year of life, were above the general averages of 9.2 and 10.6, in 1915 and 1914, respectively, for deaths from the following causes: Early infancy (premature birth, congenital debility, etc.), 100.0 per cent each year; diarrhea and enteritis, under 2 years, 84.0 and 83.4; whooping cough, 58.1 and 56.2; measles, 31.1 and 20.9; meningitis, 23.8 and 26.3; pneumonia and broncho-pneumonia, 14.6 and 21.8; and other diseases of the respiratory system, 12.1 and 11.2.

The per cents of deaths in childhood, 1 to 4 years, were above the general averages of 3.9 and 4.3 in 1915 and 1914 for deaths from the following causes: Diphtheria and croup, 45.5 each year; scarlet fever, 41.5 and 46.7; measles, 38.6 and 59.5; whooping cough, 35.5 and 38.6; meningitis, 23.4 and 23.9; tuberculosis of other organs than the lungs, 23.5 and 21.0; diarrhea and enteritis, 2 years and over, 20.7 and 23.9; diarrhea and enteritis, under 2 years, 16.0 and 16.6; pneumonia and broncho-pneumonia, 8.4 and 10.7; other diseases of the respiratory system, 5.3 and 6.2; miscellaneous violence, 6.2 and 5.0; and typhoid fever, 5.4 and 5.6.

The per cents of deaths in youth, 5 to 14 years, were above the general averages of 2.8 and 2.9 for deaths from the following causes: Scarlet fever, 41.5 and 43.3; diphtheria and croup, 40.7 and 42.9; measles, 19.7 and 13.7; meningitis, 14.3 and 10.0; tuberculosis other than pulmonary, 12.1 and 12.6; typhoid fever, 10.2 and 11.2; malarial fever, 11.1 and 8.6; miscellaneous violence, 6.3 and 6.6; diarrhea and enteritis, 2 years and over, 6.3 and 6.2; other diseases of the digestive system, 4.7 and 3.9; whooping cough, 4.0 and 4.6; and general diseases other than tuberculosis and cancer, 4.4 and 4.0.

The proportion of deaths occurring at 15 to 24 years exceeded the general averages of 5.5 and 5.7 for deaths from important causes as follows: Childbirth, 27.3 and 30.5; typhoid fever, 25.0 and 21.8; tuberculosis of the lungs, 15.4 and 15.6; tuberculosis of other organs, 13.7 and 14.4; miscellaneous violence, 11.9 and 12.6; suicide, 7.2 and 9.3; and diseases of the digestive system other than diarrhea, 6.6 and 6.9.

The proportion of deaths occurring at 25 to 34 years surpassed the general averages of 9.6 and 10.0 for deaths from the following important causes: Childbirth, 46.6 and 43.6; tuberculosis of the lungs, 27.7 and 27.4; typhoid fever, 25.0 and 26.6; suicide, 21.1 and 22.3; other violence, 19.1 and 21.0; and tuberculosis other than pulmonary, 14.9 and 16.1.

The proportion of deaths occurring at 35 to 44 years exceeded the general averages of 10.9 and 11.3 for deaths from the following causes: Childbirth, 26.1 and 25.9; suicide, 23.2 each year; pulmonary tuberculosis, 22.0 and 23.4; miscellaneous violence, 17.9 and 17.3; typhoid fever, 15.2 and 17.3; general diseases other than tuberculosis and cancer (*i. e.*, diabetes, alcoholism, etc.), 14.5 and 13.6; and diseases of the digestive system other than diarrhea, 13.3 and 13.1.

The proportion of deaths occurring at 45 to 54 years surpassed the general average of 12.2 each year for deaths from the following important causes: Suicide, 21.5 and 20.1; cancer, 19.4 and 20.7; general diseases other than tuberculosis and cancer, 16.3 and 19.1; diseases of the digestive system other than diarrhea, 16.6 and 17.4; pulmonary tuberculosis, 15.4 and 14.0; Bright's disease and nephritis, 15.1 and 15.4; diseases of the nervous system other than meningitis, 14.4 and 13.6; and miscellaneous violence, 13.0 and 13.8.

The proportion of deaths occurring at 55 to 64 years exceeded the general averages of 14.0 and 13.9 for deaths from the following causes: Cancer, 26.9 and 25.5; Bright's disease and nephritis, 20.2 and 18.5; diseases of the nervous system other than meningitis, 19.4 and 19.1; diseases of the circulatory system, 18.4 and 19.3; general diseases other than tuberculosis and cancer, 19.9 and 17.9; suicide, 16.7 and 15.9; and diseases of the digestive system other than diarrhea, 15.4 and 16.0.

The per cents of deaths at the period of old age, 65 years and over, were above the general averages of 31.9 and 29.6 in 1915 and 1914 for deaths from the following important causes: Influenza, 65.7 and 58.0; diseases of the circulatory system, 57.3 and 55.1; miscellaneous causes, including "old age" or senility, 55.0 and 56.8; diseases of the respiratory system other than pneumonia, 53.0 and 50.0; diseases of the nervous system other than meningitis, 47.8 and 47.1; Bright's disease and nephritis, 45.7 and 44.6; cancer, 39.8 and 38.3; and diarrhea and enteritis, 2 years and over, 35.9 and 33.5.

MEDIAN AGE.

Geographic Divisions.—The median age at death in California, half the decedents being younger and half of them older than the age stated, was 51.8 years in 1915, and 49.6 years in 1914, as compared with 49.4 years in 1913, 49.2 years in 1912, and 48.8 years in 1911. There was thus an advance between 1911 and 1915 of no less than three years in the median age at death in California. The advance in the median age continued without any break whatever throughout the five-year period but was particularly great between 1914 and 1915.

The marked advance in the median age at death indicated for California between 1914 and 1915 appeared also without exception for each of the various geographic divisions of the state, as shown in the table which follows:

TABLE 24.—Median Age at Death, for Geographic Divisions: 1915 and 1914.

Geographic division	Median age (half older and half younger)	
	1915	1914
The State	51.8	49.6
Northern California	56.3	55.8
Coast counties	57.3	56.2
Interior counties	55.0	55.0
Central California	51.4	49.4
San Francisco	50.3	48.3
Alameda County	55.1	53.2
Other bay counties	49.1	45.9
Coast counties	57.7	56.0
Interior counties	48.5	46.6
Southern California	51.2	47.8
Los Angeles City	50.1	46.5
Rest of Los Angeles County	58.6	54.5
Other counties	47.5	45.0

It appears from Table 24 that in both 1915 and 1914 the median age of decedents was highest by far for northern California, 56.3 years and 55.8 years, respectively, as compared with only 51.4 and 49.4 for central California and merely 51.2 and 47.8 for southern California.

The median age was much lower for San Francisco, 50.3 in 1915 and 48.3 in 1914, than for Alameda County, across the bay, 55.1 and 53.2. For the remaining bay counties (Contra Costa, Marin and San Mateo), as a group, however, the median age was relatively low, only 49.1 years in 1915 and 45.9 years in 1914.

The median age was likewise very much lower for Los Angeles City, 50.1 and 46.5, than for all the rest of Los Angeles County, no less than 58.6 and 54.5 in 1915 and 1914, respectively. For the remaining counties of southern California, however, the median age was only 47.5 in 1915 and 45.0 in 1914, or the lowest among geographic divisions each year respectively.

Causes of Death.—The advance in the median age between 1914 and 1915 was general for deaths from main causes in California, as shown by the table below:

TABLE 25.—Median Age at Death from Selected Causes, for California: 1915 and 1914.

Cause of death	Median age (half older and half younger)	
	1915	1914
All causes	51.8	49.6
Typhoid fever	28.6	28.7
Other epidemic diseases	6.0	4.3
Tuberculosis	34.9	34.7
Cancer	61.3	60.4
Diseases of—		
Nervous system	61.9	61.4
Circulatory system	68.0	67.0
Respiratory system	55.9	47.6
Digestive system	37.9	36.4
Bright's disease and nephritis	68.0	62.3
Suicide	44.3	41.8
Other violence	37.5	36.6
All other causes	32.0	30.8

This table indicates that the median age was greater in 1915 than in 1914 for each of the selected causes of death shown except only typhoid fever, for which the slight decrease from 28.7 to 28.6 years is negligible.

Except for the group of miscellaneous epidemic diseases, including epidemic diseases connected with infancy and childhood, the median age at death was below the general average of 51.8 years in 1915 and 49.6 years in 1914 only for typhoid fever, 28.6 and 28.7; tuberculosis, 34.9 and 34.7; miscellaneous violence, 37.5 and 36.6; suicide, 44.3 and 41.8; and diseases of the digestive system (including many deaths from infantile diarrhea), 37.9 and 36.4.

In contrast with the very low median ages for deaths from typhoid fever, tuberculosis, suicide and other violence, as well as from digestive ailments, it will be observed from Table 25 that the median age at death was very high for other causes in 1915 and 1914, respectively, as follows: Diseases of the respiratory system (pneumonia, etc.), 55.9 and 47.6; cancer, 61.3 and 60.4; diseases of the nervous system (apoplexy, etc.), 61.9 and 61.4; Bright's disease and nephritis, 68.0 and 62.3; and diseases of the circulatory system (heart disease, etc.), 68.0 and 67.0.

The median age was greater for each sex in 1915 than in 1914, the figures for males being 51.8 and 50.1, and for females being 51.9 and

48.7, respectively. The median age was practically the same for each sex in 1915, male 51.8 and female 51.9, but in 1914 the age was considerably higher for males, 50.1, than for females, 48.7.

MARITAL CONDITION OF DECEDENTS.

Geographic Divisions.—Tables 26 and 27 present by numbers and per cents, respectively, the marital condition of male and female decedents aged 15 years and over for the several geographic divisions in both 1915 and 1914, children under 15 years of age being excluded from the analysis of decedents according to marital condition.

TABLE 26.—Deaths of Males and Females 15 Years and Over Classified by Marital Condition, for Geographic Divisions: 1915 and 1914.

Geographic division	Deaths 15 years and over					
	Males			Females		
	Total	Single	Married	Widowed	Divorced	Unknown
1915.						
The State	20,394	6,408	9,275	3,049	376	1,286
Northern California	2,435	894	927	379	59	176
Coast counties	1,235	423	492	209	26	82
Interior counties	1,200	471	435	170	30	94
Central California	10,958	3,675	4,757	1,566	196	764
San Francisco	3,914	1,375	1,656	553	68	264
Other bay counties	2,988	623	1,106	391	40	79
Coast counties	1,368	428	636	244	20	50
Interior counties	3,438	1,249	1,370	378	70	371
Southern California	7,001	1,830	3,591	1,104	121	346
Los Angeles	4,734	1,233	2,459	800	53	159
Other counties	2,267	608	1,132	304	38	187
Northern and Central California	13,398	4,569	5,684	1,945	255	940
Coast counties	8,756	2,849	3,379	1,397	155	475
Interior counties	4,638	1,720	1,895	548	101	465
Metropolitan area	6,152	1,998	2,761	944	106	343
Rural counties	7,241	2,571	2,923	1,001	149	507
1914.						
The State	19,315	6,082	8,750	2,900	347	1,336
Northern California	2,287	882	896	374	54	161
Coast counties	1,172	424	472	193	21	62
Interior counties	1,115	468	394	181	33	99
Central California	10,409	3,491	4,498	1,496	204	732
San Francisco	3,715	1,307	1,560	550	68	230
Other bay counties	2,121	576	1,064	346	49	86
Southern California	6,898	1,789	3,254	1,126	143	394
Los Angeles	4,254	1,110	2,000	780	86	200
Other counties	2,644	679	1,254	346	57	194
Northern and Central California	15,297	4,941	6,444	2,320	297	1,130
Coast counties	8,928	2,961	3,577	1,487	176	537
Interior counties	6,369	2,080	2,867	833	121	593
Metropolitan area	7,181	2,357	3,000	1,034	137	441
Rural counties	9,114	2,724	3,467	1,286	160	689
The State	18,888	5,975	8,595	2,974	341	1,336
Northern California	2,287	882	896	374	54	161
Coast counties	1,172	424	472	193	21	62
Interior counties	1,115	468	394	181	33	99
Central California	10,409	3,491	4,498	1,496	204	732
San Francisco	3,715	1,307	1,560	550	68	230
Other bay counties	2,121	576	1,064	346	49	86
Southern California	6,898	1,789	3,254	1,126	143	394
Los Angeles	4,254	1,110	2,000	780	86	200
Other counties	2,644	679	1,254	346	57	194
Northern and Central California	15,297	4,941	6,444	2,320	297	1,130
Coast counties	8,928	2,961	3,577	1,487	176	537
Interior counties	6,369	2,080	2,867	833	121	593
Metropolitan area	7,181	2,357	3,000	1,034	137	441
Rural counties	9,114	2,724	3,467	1,286	160	689

Coast counties -----	1,267	400	585	198	18	66	815	104	968	324	8	11
Interior counties -----	3,506	1,308	1,277	402	69	350	1,568	148	846	583	15	26
Southern California -----	6,619	1,759	3,398	980	89	443	4,430	597	2,261	1,464	57	51
Los Angeles -----	4,388	1,150	2,310	664	64	210	3,143	448	1,578	1,042	41	34
Other counties -----	2,231	609	1,068	276	25	233	1,237	149	683	422	16	17
Northern and Central California -----	12,698	4,323	5,352	1,870	258	883	7,119	778	3,868	2,791	97	87
Coast counties -----	8,275	2,707	3,681	1,237	156	444	5,013	579	2,272	2,044	76	43
Interior counties -----	4,421	1,616	1,671	583	102	449	2,106	199	1,094	747	21	45
Metropolitan area -----	5,836	1,883	2,624	806	117	316	3,639	405	1,690	1,530	62	23
Rural counties -----	6,860	2,440	2,728	974	141	577	3,480	373	1,746	1,261	35	65

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TABLE 27.—Per Cent Distribution, by Marital Condition, of Male and Female Decedents 15 Years and Over, for Geographic Divisions: 1915 and 1914.

Geographic division	Per cent of decedents 15 years and over											
	Males						Females					
	Single	Married	Widowed	Divorced	Unknown		Single	Married	Widowed	Divorced	Unknown	
	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914
The State	31.4	31.5	45.5	45.3	15.0	14.5	1.8	1.8	6.3	6.0	12.0	11.9
Northern California	26.7	26.4	38.1	37.9	15.6	16.3	2.4	2.4	7.2	7.0	8.5	11.0
Coast counties	31.3	36.2	39.8	40.3	16.9	16.4	2.4	1.8	6.6	5.3	9.6	12.5
Interior counties	30.3	26.6	36.2	35.3	14.2	16.2	2.5	3.0	7.8	8.9	7.2	9.5
Central California	33.5	33.5	43.4	43.1	14.3	14.4	1.8	2.0	7.0	7.0	12.4	10.9
San Francisco	35.1	35.2	42.3	42.0	14.1	14.8	1.7	1.8	6.8	6.2	14.4	11.6
Other bay counties	27.8	27.2	49.4	49.2	17.5	16.3	1.8	2.3	3.5	4.0	12.6	10.5
Coast counties	31.3	31.6	45.8	46.2	17.8	15.6	1.5	1.4	3.6	5.2	12.1	12.8
Interior counties	36.3	36.5	39.9	38.6	11.0	12.2	2.0	2.1	10.8	10.6	9.5	9.4
Southern California	26.3	26.6	51.3	51.3	15.8	14.1	1.7	1.3	4.9	6.7	12.2	13.5
Los Angeles	26.0	26.2	51.9	52.6	16.9	14.9	1.8	1.5	8.4	4.8	11.4	14.3
Other counties	26.7	27.3	49.9	48.8	13.4	12.4	1.7	1.1	8.3	10.4	14.1	11.6
Northern and Central California	34.1	34.1	42.5	42.2	14.5	14.7	1.9	2.0	7.0	7.0	11.8	10.9
Coast counties	32.5	32.7	44.3	44.5	16.0	15.5	1.8	1.9	5.4	5.4	13.0	11.6
Interior counties	37.1	36.5	38.9	37.8	11.8	13.2	2.2	2.3	10.0	10.2	9.0	9.5
Metropolitan area	32.3	32.3	44.9	45.0	15.3	15.3	1.7	2.0	5.6	5.4	13.6	11.1
Rural counties	35.5	35.6	40.4	39.8	13.8	14.2	2.1	2.0	8.2	8.4	9.8	10.7

Exclusive of children under 15 years of age, the male decedents in California in 1915 and 1914 totaled 20,394 and 19,315, while the females numbered 12,463 and 11,549, respectively. Table 26 shows that the marital condition of the male decedents aged 15 years and over was as follows in 1915 and 1914, respectively: Single, 6,408 and 6,082; married, 9,275 and 8,750; widowed, 3,049 and 2,800; divorced, 376 and 347; and unknown, 1,286 and 1,336. For the female decedents, 15 years and over, the distribution each year was: Single, 1,492 and 1,375; married, 5,824 and 5,627; widowed, 4,872 and 4,255; divorced, 172 and 154; and unknown, 103 and 138.

It appears from Table 27 that the per cent distribution by marital condition for male and female decedents was as follows in 1915 and 1914, respectively: Single, 31.4 and 31.5 for males against only 12.0 and 11.9 for females; married, 45.5 and 45.3 for males against 46.7 and 48.7 for females; widowed, only 15.0 and 14.5 for males against 39.1 and 36.9 for females; divorced, 1.8 each year for males against 1.4 and 1.3 for females; and unknown, 6.3 and 6.9 for males against only 0.8 and 1.2 for females. Data on deaths by marital condition are available for California only for 1913 to 1915, inclusive, the annual average per cents for the three-year period being as follows: Single, males, 31.8 and females merely 12.1; married, males 45.0 and females 47.8; widowed, males merely 14.8 and females 37.7; divorced, males 1.7 and females 1.3; and unknown, males 6.7 and females merely 1.1. The proportion married is nearly the same among men as among women. However, the proportion single is much greater among men than among women while, on the other hand, the proportion widowed is much less for men than for women.

Reference to Table 27 indicates that in both 1915 and 1914 the per cents single among men were much higher for the territory north of Tehachapi than for that to the south. The per cents for single men were somewhat less for the metropolitan area than for the rural counties north of Tehachapi, but were much greater for San Francisco than for the other bay counties.

The per cents single among women vary comparatively little for different geographic divisions, being only slightly greater for southern California than for northern and central California together, for the metropolitan area than for the rural counties north of Tehachapi, and for San Francisco than for the adjacent suburban counties.

The proportion of married men among decedents was considerably greater for the territory south of Tehachapi than for that to the north. The proportion of married men was considerably greater for the metropolitan area than for the rural counties north of Tehachapi, but was much less for San Francisco than for the adjoining bay counties.

The proportion of married women varies relatively little among geographic divisions, the per cents being slightly greater for southern California than for the territory north of Tehachapi, but somewhat less for the metropolitan area than for the rural counties, and slightly less for the metropolis proper than for the adjoining suburbs.

The proportion of widowers among decedents was slightly greater in general for the territory south of Tehachapi than for that to the north as well as for the metropolitan area than for the rural counties, but was much less for San Francisco alone than for the group of other bay counties.

The proportion of widows among decedents was somewhat greater for the territory north of Tehachapi than for that to the south, in contradistinction from the opposite contrast between north and south for widowers. However, the proportion of widows, like that of widowers, was somewhat greater for the metropolitan area than for the rural counties north of Tehachapi though less for the metropolis proper than for the suburban counties.

Causes of Death.—Tables 28 and 29 present numbers and per cents, respectively, showing the deaths from twelve selected causes of males and females 15 years and over classified by marital condition for California as a whole in both 1915 and 1914.

TABLE 26.—Deaths from Selected Causes of Males and Females 15 Years and Over, Classified by Marital Condition, for California, 1916 and 1914.

Cause of death	Deaths 15 years and over											
	Males					Females						
	Total	Single	Married	Widowed	Divorced	Unknown	Total	Single	Married	Widowed	Divorced	Unknown
1915.												
All causes	20,394	6,406	9,275	3,049	376	1,296	12,468	1,408	5,224	4,872	173	108
Typhoid fever	167	84	71	2	5	10	66	17	40	7	2	
Other epidemic diseases	177	51	79	33	9	9	145	13	67	65		
Tuberculosis	3,384	1,702	1,241	201	57	183	1,632	440	967	210	24	11
Cancer	1,390	276	715	204	22	43	1,406	125	776	566	23	6
Diseases of nervous system	1,822	411	965	298	37	91	1,238	135	550	613	30	10
Diseases of circulatory system	4,395	975	2,142	982	74	222	2,750	218	1,003	1,485	20	24
Diseases of respiratory system	1,747	560	717	345	28	94	1,116	113	435	547	11	10
Diseases of digestive system	1,222	374	621	156	15	56	805	97	398	294	8	8
Bright's disease and nephritis	1,672	404	858	319	30	61	944	81	442	398	14	9
Suicide	898	295	328	63	25	157	167	32	94	27	9	5
Other violence	2,198	887	846	158	50	257	470	84	212	159	10	5
All other causes	1,482	389	672	225	33	108	1,514	137	840	501	21	15
1914.												
All causes	19,315	6,062	8,750	2,900	347	1,336	11,549	1,375	5,627	4,255	154	138
Typhoid fever	228	113	97	4	4	10	83	16	61	3	1	2
Other epidemic diseases	160	41	78	33	2	6	130	13	70	57	3	2
Tuberculosis	3,213	1,631	1,109	187	45	181	1,600	432	968	181	19	10
Cancer	1,264	267	728	203	22	44	1,408	96	770	566	23	13
Diseases of nervous system	1,922	438	992	332	38	112	1,299	122	544	589	19	25
Diseases of circulatory system	3,902	875	1,866	841	75	215	2,407	198	904	1,256	22	27
Diseases of respiratory system	1,456	422	646	280	24	104	911	90	362	438	8	13
Diseases of digestive system	1,267	350	623	192	22	60	770	101	362	270	7	10
Bright's disease and nephritis	1,493	341	784	287	29	52	889	88	448	337	7	9
Suicide	771	272	312	63	18	116	141	21	90	22	6	2
Other violence	2,204	912	762	155	35	340	461	76	226	133	14	12
All other causes	1,485	400	663	236	33	96	1,430	117	812	463	25	13

It appears from Table 29, giving the per cent distribution, that in both 1915 and 1914 the per cents of single men among decedents were above the general averages of 31.4 and 31.5 for deaths from the following causes: Tuberculosis, 50.3 and 50.8; typhoid fever, 50.3 and 49.6; miscellaneous violence, 40.3 and 41.4; and suicide, 34.0 and 35.3.

The per cents single among women were likewise above the general averages of 12.0 and 11.9 for these same causes, and one other, as follows: Tuberculosis, 26.6 and 27.0; typhoid fever, 25.8 and 19.3; miscellaneous violence, 17.9 and 16.5; suicide, 19.1 and 14.9; and also diseases of the digestive system, 12.1 and 13.1.

The proportion of married men among decedents, as compared with the annual average per cents of 45.5 and 45.3, was particularly high for the following causes of death: Cancer, 56.7 and 57.6; diseases of the nervous system, 54.1 and 51.3; Bright's disease and nephritis, 51.3 and 52.5; diseases of the digestive system, 50.8 and 51.6; and diseases of the circulatory system, 48.7 and 48.6.

The proportion of married women among decedents, in comparison with the averages of 46.7 and 48.7, was especially great for the following causes: Typhoid fever, 60.6 and 73.5; tuberculosis, 58.5 and 59.9; suicide, 56.3 and 63.8; sundry miscellaneous causes, 55.5 and 56.8; cancer, 51.9 and 54.7; diseases of the digestive system, 49.4 and 49.6; and Bright's disease and nephritis, 46.8 and 50.4.

The per cents for widowers exceeded the averages of 15.0 and 14.5 in the following important instances: Diseases of the circulatory system, 22.3 and 21.6; sundry miscellaneous causes, 19.2 and 19.7; diseases of the respiratory system, 19.9 and 17.9; Bright's disease and nephritis, 19.1 and 19.2; sundry epidemic diseases, 18.7 and 20.6; diseases of the nervous system, 16.3 and 17.2; and cancer, 16.2 and 16.1.

The per cents for widows surpassed the averages of 39.1 and 36.9 in notable instances as follows: Diseases of the circulatory system, 54.0 and 52.2; diseases of the respiratory system, 49.0 and 48.1; diseases of the nervous system, 45.8 and 45.3; sundry epidemic diseases, 44.8 and 38.0; and Bright's disease and nephritis, 42.2 and 37.9.

OCCUPATIONS AND CAUSES OF DEATH.

Occupations.—The table below gives, for deaths 15 years and over, the number of men and women for whom some occupation was reported in contrast with those for whom no gainful occupation was shown, the figures being for the whole state in both 1915 and 1914.

TABLE 30.—Deaths 15 Years and Over Classified by Sex and Occupation, with Per Cents by Sex, for California: 1915 and 1914.

	Deaths						Per cent male		Per cent female	
	Total		Male		Female					
	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914
15 years and over.....	32,857	30,864	20,394	19,315	12,463	11,549	62.1	62.6	37.9	37.4
Occupations reported ---	18,778	17,859	17,600	16,673	1,178	1,156	93.7	93.4	6.3	6.6
No gainful occupation....	14,079	13,005	2,794	2,642	11,285	10,363	19.8	20.3	80.2	79.7

Exclusive of children under 15 years of age, who would all be without gainful occupation in statistical terminology, the decedents aged 15 years and over totaled 32,857 in 1915 and 30,864 in 1914. The males numbered 20,394 and 19,315 in 1915 and 1914, and the females numbered 12,463 and 11,549. Among all decedents aged 15 years and over the per cents male were 62.1 in 1915 and 62.6 in 1914, while the per cents female were 37.9 and 37.4 respectively. It may be added that for 1911 to 1915, among decedents of 15 years and over, the annual average per cent male was 62.9, and the per cent female was 37.1.

Of the decedents 15 years and over for whom occupations were reported (totaling 18,778 and 17,859 in 1915 and 1914, respectively), the males numbered 17,600 in 1915 and 16,673 in 1914, while the females numbered only 1,178 and 1,186, respectively. Among decedents with occupations reported the per cents male in 1915 and 1914 were no less than 93.7 and 93.4 while the per cents female were merely 6.3 and 6.6. Similarly, among decedents with occupations the annual average per cent male in 1911 to 1915 was as great as 93.8 and the per cent female was merely 6.2.

Of the decedents 15 years and over without gainful occupation (totaling 14,079 and 13,005 in 1915 and 1914, respectively), the men were merely 2,794 in 1915 and 2,642 in 1914, while the women (housewives and others not working for wages) were no less than 11,285 and 10,363, respectively. Among decedents without gainful occupation the per cents male in 1915 and 1914, respectively, were only 19.8 and 20.3 while the per cents female were as great as 80.2 and 79.7. In 1911 to 1915, likewise, the annual average per cent male among decedents without gainful occupation was only 20.7 and the per cent female was no less than 79.3.

Main Kinds of Occupation.—The following table shows the distribution of male decedents 15 years and over, engaged in the main kinds of occupations, the data being for California in both 1915 and 1914 together with annual average per cents for 1911 to 1915 in addition:

TABLE 31.—Deaths of Males 15 Years and Over Engaged in Gainful Occupations, Classified by Kind of Occupation, with Per Cents, for California: 1915 and 1914.

Kind of occupation	Males 15 years and over				Annual average per cent: 1911 to 1915
	Deaths		Per cent		
	1915	1914	1915	1914	
All occupations -----	17,600	16,673	100.0	100.0	100.0
Professional -----	1,133	906	6.4	5.8	5.7
Clerical and official -----	1,413	1,276	8.0	7.7	7.6
Mercantile and trading -----	1,190	1,286	6.8	7.7	7.5
Public entertainment -----	409	392	2.3	2.3	2.3
Personal service, police and military -----	522	578	3.0	3.5	3.1
Laboring and servant -----	3,752	3,470	21.3	20.8	21.2
Manufacturing and mechanical industry -----	3,657	3,402	20.8	20.4	20.5
Agriculture, transportation and other outdoor -----	5,447	5,178	31.0	31.1	31.4
All other occupations -----	77	125	0.4	0.7	0.7

For 1915 and 1914, respectively, the male decedents for whom occupations were shown totaled 17,600 and 16,673 and were distributed by main kinds of occupations as follows: Agriculture, transportation and other outdoor pursuits, 5,447 and 5,178 or 31.0 and 31.1 per cent; laboring and servant work, 3,752 and 3,470 or 21.3 and 20.8 per cent; manufacturing and mechanical industry, 3,657 and 3,402 or 20.8 and 20.4 per cent; clerical and official positions, 1,413 and 1,276 or 8.0 and 7.7 per cent; mercantile and trading occupations, 1,190 and 1,286 or 6.8 and 7.7 per cent; professional callings, 1,133 and 966 or 6.4 and 5.8 per cent; and various minor kinds of occupations, altogether 1,108 and 1,095 or 5.7 and 6.5 per cent. Similarly, the annual average per cents for 1911 to 1915 were: Agriculture, transportation and other outdoor pursuits, 31.4; laboring and servant work, 21.2; manufacturing and mechanical industry, 20.5; clerical and official positions, 7.6; mercantile and trading occupations, 7.5; professional callings, 5.7; and various minor kinds of occupations, 6.1.

Causes of Death and Specific Occupations.—Tables 38 and 39, *post*, which are presented for reference among detailed or general tables following this text discussion of deaths, give in detail the numbers and per cent distribution, by selected causes, of deaths of males and females 15 years and over, classified by occupation, for California in both 1915 and 1914. The per cent distributions thus shown are presented not only for the main kinds of occupations but also, under each main kind of occupation, for every specific occupation showing at least 50 deaths in the state as a whole in the calendar year covered.

Reference to the per cent distributions given in Tables 38 and 39, *post*, for 1915 and 1914, respectively, shows that among all decedents 15 years and over the per cent of deaths from typhoid fever was 0.7 in 1915 and 1.0 in 1914, the per cents being 0.8 and 1.2 among men but only 0.5 and 0.7 among women of the age stated. In 1915 and 1914, respectively, the per cents of deaths from typhoid fever were notably high for the following occupations of men: Butchers 3.8 and 3.5; plumbers and gas and steamfitters, 3.6 and 1.0; sailors, pilots and oystermen, 1.1 and 2.3; bookkeepers, clerks and copyists, 1.6 each year; machinists, 1.5 and 1.4; laborers (not agricultural), 1.3 and 1.4; farmers, planters and farm laborers, 1.2 each year; and masons (brick and stone), 1.2 and 1.1. Among women the per cents of deaths from typhoid fever were particularly great for nurses and midwives, 3.5 in 1915 and 1.2 in 1914.

The "great white plague," tuberculosis, caused 15.3 per cent of all deaths at 15 years and over in 1915 and 15.6 per cent in 1914, the per cents being 16.6 each year for men and 13.3 and 13.9 for women of potential working age. The per cents were 17.2 and 17.4 among men for whom occupations were reported as compared with only 12.5 and 11.6 for men without gainful occupation, and were likewise 18.5 and 19.3 among women wage earners against only 12.7 and 13.2 for housewives and other nonworkers.

The per cents of deaths from tuberculosis exceeded the averages of 17.2 and 17.4 among men at work for several specific occupations in both 1915 and 1914 as follows: Barbers and hairdressers, 31.3 and 26.7; servants (waiters, cooks), 28.1 and 28.2; bookkeepers, clerks and copyists, 26.4 and 28.9; engineers and surveyors, 28.6 and 26.2; tailors, 23.2 and 27.9; plumbers and gas and steamfitters, 22.9 and 27.3; musicians and teachers of music, 21.9 and 26.2; laborers (not agricultural), 22.3 each year; architects, artists and teachers of art, 27.9 and 19.2; draymen, hackmen and teamsters, 22.5 and 19.1; iron and steel workers, 24.5 and 18.9; saloonkeepers, liquor dealers, bartenders and restaurant keepers, 19.5 and 21.9; miners and quarrymen, 19.9 and 19.4; cabinetmakers and upholsterers, 17.6 and 17.9; compositors, printers and pressmen, 17.4 and 27.4; and engineers and firemen (not locomotive), 17.4 and 18.3. For women workers the per cents of deaths from tuberculosis were 26.2 and 40.0 among bookkeepers, clerks and copyists in 1915 and 1914, respectively.

On the other hand, the per cents of deaths from tuberculosis were very low indeed in both 1915 and 1914 for men engaged in the following occupations: Policemen, watchmen and detectives, 6.6 and 8.7; clergymen, 7.2 and 7.7; lawyers, 9.2 and 9.0; bankers, brokers and officials of companies, 9.1 and 9.3; farmers, planters and farm laborers, 10.3 and 9.0; stockraisers, herders and drovers, 10.5 and 12.0; merchants and dealers, 10.6 and 9.8; physicians and surgeons, 9.9 and 12.0; hotel and boarding-house keepers, 11.3 and 8.5; gardeners, florists, nurserymen and vinegrowers, 11.9 and 9.4; lumbermen and raftsmen, 8.2 and 12.2; soldiers, sailors and marines (U. S.), 10.3 and 12.8; and blacksmiths, 12.5 and 12.7.

The per cents of deaths produced by cancers were 8.4 and 8.7 in 1915 and 1914 for all decedents aged 15 years and over, being only 6.2 and 6.6 among men but no less than 12.0 and 12.2 among women. For men, the per cents of deaths from cancer were notably high among hotel and boarding-house keepers, 10.4 and 8.5; bankers, brokers and officials of companies, 10.3 and 6.9; lawyers, 7.5 and 10.5; butchers, 8.5 and 15.1; blacksmiths, 9.6 and 7.6; gardeners, florists, nurserymen and vinegrowers, 9.7 and 8.9; farmers, planters and farm laborers, 7.8 and 8.8; masons (brick and stone), 8.3 and 7.8; carpenters, 7.5 and 9.4; merchants and dealers, 7.6 and 7.8; sailors, pilots and oystermen, 7.6 and 7.7; clergymen, 7.2 and 7.7; and miners and quarrymen, 7.0 and 7.3. For women, the per cents of deaths from cancer were 12.0 and 13.4 among teachers in schools in 1915 and 1914, respectively.

The per cents for diseases of the circulatory system (heart disease, etc.) were 21.7 and 20.4 in 1915 and 1914 among all decedents 15 years and over, being 21.5 and 20.2 among men and 22.1 and 20.8 among women. The per cents were particularly great for the following specific occupations of men: Bankers and brokers, 29.8 and 32.3; physicians and surgeons, 28.1 and 21.5; lawyers, 26.4 and 28.4; clergymen, 24.8 and 29.5; architects, artists and teachers of art, 23.5

and 24.7; merchants and dealers, 26.9 and 22.0; hotel and boarding-house keepers, 23.6 and 28.0; collectors, auctioneers and agents, 23.8 and 21.2; masons (brick and stone), 27.4 and 25.6; gardeners and nurserymen, 26.4 and 22.2; farmers and planters, 23.2 and 24.9; stock-raisers, herders and drovers, 24.0 and 22.5; tailors, 23.2 and 21.3; cabinetmakers and upholsterers, 21.6 and 25.0; and policemen, watchmen and detectives, 22.8 and 22.5. Among women wage earners the per cents of deaths from heart disease were 23.6 and 17.6 for servants and 22.6 and 18.8 for dressmakers and seamstresses.

The per cents for Bright's disease and nephritis, occurring often with heart disease, were 8.0 and 7.7 in 1915 and 1914 for all decedents 15 years and over, being 8.2 and 7.7 among men and 7.6 and 7.7 among women. The per cents were notably high for men engaged in the following occupations: Lawyers, 16.1 and 12.7; boot and shoe makers, 13.7 and 15.4; musicians and teachers of music, 13.7 and 12.3; masons (brick and stone), 13.1 and 12.2; composers, printers and pressmen, 11.2 and 11.9; clergymen, 11.1 and 9.3; merchants and dealers, 10.4 and 10.1; collectors and agents, 10.6 and 8.4; hotel and boarding-house keepers, 8.5 and 11.8; plumbers and gas and steam-fitters, 9.6 and 9.1; farmers and planters, 9.3 and 9.0; and steam railroad employees, 8.4 and 8.0. For women workers, the per cents of deaths from Bright's disease and nephritis were 7.1 and 8.2 among dressmakers and seamstresses in 1915 and 1914, respectively.

For diseases of the nervous system the per cents in 1915 and 1914 were 9.6 and 10.5 for all decedents, 8.9 and 10.0 for males, and 10.7 and 11.2 for females. The per cents were particularly great among men in the following occupations: Clergymen, 12.4 and 17.1; painters, glaziers and varnishers, 14.1 and 12.0; bankers and brokers, 13.6 and 10.3; physicians and surgeons, 8.9 and 14.6; lawyers, 11.5 and 11.9; tailors, 12.0 and 11.0; merchants and dealers, 10.1 and 12.7; architects, artists and teachers of art, 10.3 and 11.0; collectors and agents, 10.0 and 10.8; barbers and hairdressers, 12.2 and 10.0; composers, printers and pressmen, 12.2 and 9.5; carpenters, 9.8 and 11.1; stockraisers, herders and drovers, 9.7 and 11.7; farmers and planters, 9.7 and 11.3; gardeners and nurserymen, 9.3 and 12.2; and sailors and pilots, 9.4 and 11.2. The per cents were 8.3 and 14.4 for school teachers among women workers.

For diseases of the respiratory system, the per cents in 1915 and 1914 were 8.7 and 7.7 for all decedents, 8.6 and 7.5 for men, and 8.9 and 7.9 for women. The per cents were notably high for the following occupations of men: Clergymen, 12.4 and 10.1; boot and shoe makers, 14.7 and 8.5; hucksters and peddlers, 10.3 and 8.6; saloon keepers and restaurant keepers, 10.2 and 8.0; soldiers, sailors and marines (U. S.), 9.7 and 12.2; farmers and planters, 9.8 and 9.5; draymen, hackmen and teamsters, 8.5 and 8.8; and laborers (not agricultural), 8.7 and 7.9. Among women workers, the per cents were 9.0 and 10.6 for school teachers, 10.6 and 8.0 for servants, and 9.5 and 8.3 for dressmakers and seamstresses.

For diseases of the digestive system, the per cents in 1915 and 1914 were 6.2 and 6.4 among all decedents, 6.0 and 6.3 among men, and 6.5 and 6.7 among women. The per cents were notably high for men in the following occupations: Saloon keepers and restaurant keepers, 8.9 and 7.7; barbers and hairdressers, 9.6 and 6.7; blacksmiths, 7.8 and 10.1; collectors and agents, 6.7 and 7.8; merchants and dealers, 6.2 and 8.4; compositors, printers and pressmen, 6.1 and 8.3; stockraisers, herders and drovers, 6.4 and 7.6; draymen, hackmen and teamsters, 6.9 and 6.4; and farmers and planters, 6.2 and 7.0. The per cents were 14.8 and 12.9 for clerks and copyists and 8.9 and 9.3 for nurses and midwives among women wage earners.

Suicides formed 3.2 per cent of all deaths at 15 years and over in 1915 and 3.0 per cent in 1914, the per cents being 4.2 and 4.0 among men and 1.3 and 1.2 among women of potential working age. The per cents of suicides were 4.2 and 3.9 for men with occupations reported as compared with 4.7 and 4.6 for those not working or on the retired list. Among women, however, the per cents of suicides were greater for wage earners, 2.9 and 1.9, than for housewives and others without gainful occupation, 1.2 each year.

The occupations of men equalling or exceeding the average per cents of 4.2 and 3.9 for suicides were as follows: Soldiers, sailors and marines (U. S.), 9.0 and 5.4; bakers, 7.4 and 8.5; barbers and hairdressers, 8.7 and 4.2; saloon keepers and restaurant keepers, 6.6 and 8.0; collectors and agents, 5.8 and 7.5; policemen, watchmen and detectives, 7.4 and 5.1; servants (waiters, cooks), 5.5 and 5.7; carpenters, 6.0 and 4.4; painters, glaziers and varnishers, 6.3 and 4.2; blacksmiths, 5.4 and 4.4; butchers, 4.7 and 5.8; hotel and boarding-house keepers, 4.7 and 5.1; engineers and firemen (not locomotive), 4.7 and 4.5; laborers (not agricultural), 4.5 and 4.6; and draymen, hackmen and teamsters, 5.3 and 3.9. Among women reporting gainful occupations, the per cents of suicides were quite high for nurses and midwives, 5.3 and 3.5.

For deaths from violence other than suicide, the per cents in 1915 and 1914 were 8.1 and 8.6 for all decedents 15 years and over, being as great as 10.8 and 11.4 among men but only 3.8 and 4.0 among women of this age. For each sex, especially females, the proportion dying from accidental injuries was greater among those reporting occupations than among those without gainful occupation. The per cents were 10.9 in 1915 and 11.6 in 1914 for men workers against 10.2 and 10.1 for men not employed, and were 7.0 and 7.6 for women wage earners as compared with 3.4 and 3.6 for housewives and other nonworkers.

The occupations of men with more than the average per cents of 10.9 and 11.6 for deaths from miscellaneous violence were as follows: Lumbermen and raftsmen, 24.6 and 28.2; steam railroad employees, 23.6 and 21.4; hucksters and peddlers, 17.7 and 15.5; sailors and pilots, 15.6 and 20.1; draymen, hackmen and teamsters, 15.3 and 19.1; policemen, watchmen and detectives, 15.4 and 18.1; laborers (not agricultural), 15.5 and 17.6; soldiers, sailors and marines (U. S.), 17.2 and 15.5; engineers and firemen (not locomotive), 13.6 and 14.3;

machinists, 13.2 and 13.3; engineers and surveyors, 11.8 and 15.2; and miners and quarrymen, 13.2 and 11.8.

On the other hand, the occupations of men with remarkably small per cents of deaths from accidents were the following: Clergymen, 3.3 and 2.3; lawyers, 4.0 and 3.0; compositors, printers and pressmen, 4.1 and 6.0; bankers and brokers, 5.8 and 4.9; masons (brick and stone), 5.9 and 4.4; architects, artists and teachers of art, 5.9 and 6.8; butchers, 6.6 and 3.5; boot and shoemakers, 7.9 and 1.7; merchants and dealers, 7.9 and 5.6; bookkeepers, clerks and copyists, 6.3 and 6.5; barbers and hairdressers, 6.9 and 5.0; saloon keepers and restaurant keepers, 6.9 and 7.7; and musicians and teachers of music, 6.8 and 7.7 in 1915 and 1914, respectively.

TABLE 32.—Deaths From Each Specified Disease and Class of Diseases.

Cause of death	Total deaths	Male	Female	White	Negro	Indian	Chinese
ALL CAUSES	39,026	22,871	15,155	36,890	583	139	751
I. GENERAL DISEASES	11,213	6,575	4,638	10,489	209	54	273
1. Typhoid fever	276	192	84	254	3	3	6
2. Typhus fever							
3. Relapsing fever							
4. Malaria	45	29	16	41		1	1
5. Smallpox	8	1	2	3			
6. Measles	132	72	60	123	1	1	2
7. Scarlet fever	53	27	26	51	1		1
8. Whooping-cough	124	48	76	117	1	1	
9. (a) Diphtheria	299	146	153	297	1		
(b) Croup	11	5	6	11			
10. Influenza	181	96	85	177	1		
11. Miliary fever							
12. Asiatic cholera							
13. Cholera nostras							
14. Dysentery	50	26	24	48			1
15. Plague	1	1		1			
16. Yellow fever							
17. Leprosy	3	3		1			2
18. Erysipelas	58	38	20	56	1		
19. Other epidemic diseases	5	5		4	1		
20. Purulent infection and septicæmia	61	40	21	55			2
21. Glanders							
22. Anthrax	2	2		2			
23. Rabies	6	3	3	6			
24. Tetanus	22	19	3	21	1		
25. Mycoses	6	3	3	6			
26. Pellagra	28	9	19	28			
27. Beriberi	3	2	1	1			1
<i>Tuberculosis.</i>							
28. Tuberculosis of the lungs	4,752	3,200	1,552	4,336	136	31	180
29. Acute miliary tuberculosis	126	66	60	118	6		2
30. Tuberculous meningitis	323	183	140	282	5	1	7
31. Abdominal tuberculosis	204	98	106	173	4	5	4
32. Pott's disease	32	24	8	32			
33. White swellings	21	12	9	20	1		
34. Tuberculosis of other organs	66	46	20	64	1	1	
35. Disseminated tuberculosis	27	16	11	25	1	1	
36. Rickets	11	6	5	10			1
37. Syphilis	245	165	80	214	8	1	13
38. Gonococcus infection	6	4	2	5	1		
<i>Cancer.</i>							
39. Cancer* of the buccal cavity	93	87	6	91	2		
40. Cancer* of the stomach, liver	1,121	636	485	1,079	7	5	17
41. Cancer* of the peritoneum, intestines, rectum	349	153	196	339	3		4
42. Cancer* of the female genital organs	378		378	371	6		1
43. Cancer* of the breast	210		240	236	1		2
44. Cancer* of the skin	108	79	29	107			
45. Cancer* of other or unspecified organs	487	316	171	470	4	2	9
46. Other tumors (except of female genital organs)	7	1	6	6	1		
47. Acute articular rheumatism	99	58	41	98			1
48. Chronic rheumatism and gout	73	32	41	71			2
49. Scurvy	2	2		2			
50. Diabetes	459	229	230	447	6		5
51. Exophthalmic goitre	42	7	35	40	1		1
52. Addison's disease	11	4	7	11			
53. Leucæmia	58	37	21	54	1		2
54. Anæmia, chlorosis	194	85	109	192			
55. Other general diseases	35	20	15	34	1		
56. Alcoholism (acute or chronic)	249	224	25	244	2	1	2
57. Chronic lead poisoning	7	6	1	7			
58. Other chronic occupation poisonings	1	1		1			
59. Other chronic poisonings	18	11	7	14			4

*Cancer and other malignant tumors.

by Sex, Race, Nativity and Age Periods, for California: 1915.

Japanese.	White				Under 1 year	1 to 9 years	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years	60 to 69 years	70 years and over
	Born in California	Born in other states	Foreign born	Unknown									
663	9,235	14,905	11,761	989	3,570	2,164	1,238	3,207	4,067	4,377	5,185	5,821	9,407
188	2,773	4,339	3,201	176	364	881	572	1,356	1,762	1,664	1,639	1,475	1,300
10	108	85	58	3		29	36	83	60	31	18	14	5
2	14	19	6	2	6	10	6	3		3	4	4	9
2	2	1			1		1	1					
2	108	17	3		41	73	6	5	4	1	2		
5	37	11	2	1	3	40	5	2	2	1			
1	110	7			72	49							3
3	235	45	14	3	13	233	32	9	6	4	2		
3	10	1			2	9							
3	22	96	58	1	10	8	4	4	7	3	13	28	104
1	25	14	8		14	9		2	3	5	3	5	9
1			1					1					
1	13	28	15		6	3		1			1	1	
4	2	2			1	1	2	4	4	10	14	8	9
4	22	16	16	1	4	4	4	9	9	7	11	7	6
		1	1					1			1		
	2	2	1	1		5			1				
	12	3	6		2	8	4	1	5	2			
	1	3	2					2	1		3		
	6	17	4	1		1		1	5	10	7	3	1
1	1					1	1			1			
79	1,037	1,768	1,434	87	30	60	318	1,153	1,202	888	566	345	181
65	33	20			9	25	17	32	22	12	6	2	1
28	195	51	35	1	42	175	26	26	22	19	8	5	
18	81	53	39		9	38	17	45	33	15	23	13	8
10	12	10				3	3	7	4	7	6	2	
10	6	4			1	3	3	4	3	2	4		1
25	29	10			4	7	7	12	14	7	4	5	6
7	13	5			1	3	5	6	3	4	4	1	
9		1			4	6						1	
9	95	63	51	5	73	10	7	18	45	34	34	21	3
	1	1	2	1		1		2	2	1			
	10	40	41			1	1		4	9	25	23	30
13	85	469	488	17				6	39	140	236	376	324
3	37	177	121	4			1	7	24	47	87	76	107
	46	227	95	3			1	4	30	89	114	80	60
1	34	133	68	1			1	1	25	54	65	45	49
1	5	73	27	2		1	1	1	2	7	15	20	52
2	70	233	166	1	2	14	6	11	40	66	113	117	118
	2	2	2						1	3		1	2
29	41	27	1	3	17	18		9	5	9	9	13	16
4	37	30						2	3	11	10	19	28
2					1	1							
1	49	230	163	5	1	8	25	31	32	45	83	118	116
	12	20	8					9	9	8	6	8	2
	3	4	4					1		2	6	2	
1	19	22	13		2	5	4	10	4	7	14	8	4
2	36	104	50	2	2	6	6	6	13	28	57	52	24
	14	13	5	2	5	4	4	2	4	3	6	3	4
	48	83	83	30				20	62	64	53	34	16
	2	4	1						3	1	1	2	
		1						1					
	2	10	1	1		1		1	1	1	4	4	2

TABLE 32.—Deaths From Each Specified Disease and Class of Diseases,

Cause of death	Total deaths	Male	Female	White	Negro	Indian	Chinese
II. DISEASES OF THE NERVOUS SYSTEM							
60. Encephalitis	3,424	1,969	1,465	3,307	23	6	43
61. (a) Simple meningitis	33	19	19	37			
(b) Cerebrospinal meningitis (undefined)	190	111	79	173			1
(c) Cerebrospinal fever	61	37	24	55	1	1	2
62. Locomotor ataxia	22	10	12	21			
63. (a) Acute anterior poliomyelitis	97	68	29	96			1
(b) Other diseases of the spinal cord	19	13	6	19			
64. Cerebral hæmorrhage, apoplexy	168	90	78	162	3		2
65. Softening of the brain	1,875	1,009	866	1,821	20	2	28
66. Paralysis without specified cause	52	32	20	52			
67. General paralysis of the insane	200	104	96	194	2	2	2
68. Other forms of mental alienation	283	221	62	271	7		4
69. Epilepsy	77	44	33	73	1		3
70. Convulsions (nonpuerperal)	134	82	52	131	2	1	
71. Convulsions of infants (under 5 years)	1		1	1			
72. Chorea	19	8	11	19			
73. Neuralgia and neuritis	4	1	3	4			
74. Other diseases of the nervous system	13	6	7	13			
75. Diseases of the eyes and their annexa	137	86	52	133	2		
76. Diseases of the ears	3	2	1	3			
	31	17	14	30			
III. DISEASES OF THE CIRCULATORY SYSTEM							
77. Pericarditis	7,251	4,453	2,798	6,976	97	8	148
78. Acute endocarditis	70	52	18	63	2		5
79. Organic diseases of the heart	572	349	223	549	12		3
80. Angina pectoris	4,801	2,938	1,863	4,606	67	5	111
81. Diseases of arteries, atheroma, aneurysm, etc.	235	144	91	229	2	1	2
82. Embolism and thrombosis	1,442	891	551	1,400	13	2	27
83. Diseases of veins (varices, hæmorrhoids, phlebitis, etc.)	79	46	33	77	1		
84. Diseases of the lymphatic system (lymphangitis, etc.)	22	12	10	22			
85. Hæmorrhage; other diseases of the circulatory system	17	11	6	17			
	13	10	3	13			
IV. DISEASES OF THE RESPIRATORY SYSTEM							
86. Diseases of the nasal fossæ	3,791	2,269	1,522	3,580	50	17	69
87. Diseases of the larynx	2	1	1	2			
88. Diseases of the thyroid body	23	11	12	22			
89. Acute bronchitis	13	2	11	13			
90. Chronic bronchitis	156	69	87	146	1	2	3
91. Broncho-pneumonia	252	133	119	240	1	2	6
92. (a) Lobar pneumonia	1,080	620	460	1,012	13	8	17
(b) Pneumonia (undefined)	1,348	868	480	1,278	28	5	25
93. Pleurisy	636	396	239	597	5		12
94. Pulmonary congestion, pulmonary apoplexy	65	42	23	62	1		
95. Gangrene of the lung	79	42	37	76			1
96. Asthma	10	8	2	10			
97. Pulmonary emphysema	97	55	42	91	1		5
98. Other diseases of the respiratory system (tuberculosis excepted)	2	2		2			
	29	20	9	29			

by Sex, Race, Nativity and Age Periods, for California: 1915—Continued.

Japanese	White												
	Born in California	Born in other states	Foreign born	Unknown	Under 1 year	1 to 5 years	10 to 15 years	20 to 25 years	30 to 35 years	40 to 45 years	50 to 55 years	60 to 65 years	70 years and over
30	535	1,620	1,085	67	100	140	69	114	231	368	573	705	1,124
1	7	18	12			3	3	7	6	8	5	1	5
16	104	43	26		47	59	17	11	11	14	13	8	10
2	35	8	10	2	13	24	9	6	5	1	2	1	
1	14	5	2		5	9	2	5	1				
1	12	52	30	1				3	5	13	31	23	17
	15	4			4	11	3	1					
1	22	93	47		1	3	2	3	16	24	30	49	40
4	130	960	685	38	3	2	4	12	46	152	321	486	849
	6	26	19	1				1	1	4	9	12	25
	12	114	64	4				2	5	13	22	45	113
1	41	140	77	13		1	1	16	69	87	61	30	18
	18	24	27	4			2	10	15	15	19	11	5
	42	52	34	3	2	7	12	22	30	14	17	16	14
	1					1							
	10				17	2							
		3	1				1		1				2
	2	8	3				1		3		4		5
2	29	58	45	1	3	9	7	12	15	19	34	18	20
		3				1					1		1
1	17	10	3		5	8	5	3	2	4	4		
22	599	3,388	2,815	174	7	61	90	172	340	590	1,006	1,634	3,261
16	22		20	5		1	7	2	7	13	13	10	17
8	117	259	161	12	1	30	32	55	76	79	103	99	97
12	372	2,141	1,964	129		25	49	101	229	426	773	1,138	2,060
1	21	136	69	3				3	7	19	50	65	91
	48	774	556	22			1	2	11	38	128	297	965
1	6	36	32	3				4	8	9	19	16	23
	5	7	10			1		3	2	4	2	6	4
	9	7	1		6	3	1	1		1	1	2	2
	5	6	2			1		1		1	7	1	2
75	1,086	1,242	1,188	64	535	363	87	168	227	307	381	540	1,183
	2					2							
1	16	4	2		6	10	1		1	2	1	1	1
	1	8	4					1	2	2	3	2	3
4	56	41	49		54	16		1	1	4	4	14	62
3	21	105	113	1	13	12			2	9	14	36	166
30	431	261	301	19	272	160	15	22	41	60	82	111	317
12	322	486	439	31	93	93	39	104	119	161	171	236	332
21	184	233	173	7	82	59	24	26	41	44	66	97	196
2	12	31	17	2		7	4	4	12	10	8	9	11
2	14	29	32	1	11		1	1	1	4	10	9	42
	4	2	4				1	2	1	1	2	2	1
	11	35	43	2	4	4	1	3	3	5	13	16	48
	1	1									1		1
	11	6	11	1			1	4	3	5	6	7	3

TABLE 32.—Deaths From Each Specified Disease and Class of Diseases.

Cause of death	Total deaths	Male	Female	White	Negro	Indian	Chinese
V. DISEASES OF THE DIGESTIVE SYSTEM							
99. Diseases of the mouth and annexa	15	10	5	15			
100. Diseases of the pharynx	63	39	24	60	2		1
101. Diseases of the œsophagus	5	1	4	5			
102. Ulcer of the stomach	180	126	54	168	1	2	7
103. Other diseases of the stomach (cancer excepted)	194	120	74	182	9	1	1
<i>Diarrhœa.</i>							
104. Diarrhœa and enteritis (under 2 years)	705	449	346	714	6	2	9
105. Diarrhœa and enteritis (2 years and over)	415	235	180	394	5	1	4
106. Ankylostomiasis							
107. Intestinal parasites	2	1	1	2			
108. Appendicitis and typhilitis	378	236	142	348	5	1	3
109. (a) Hernia	93	54	39	91			1
(b) Intestinal obstruction	275	141	134	253	7	2	4
110. Other diseases of the intestines	64	30	34	60	1		2
111. Acute yellow atrophy of the liver	6	3	3	4			1
112. Hydatid tumor of the liver							
113. Cirrhosis of the liver	381	282	99	356	5		12
114. Biliary calculi	78	31	47	77			1
115. Other diseases of the liver	154	78	76	147	1		2
116. Diseases of the spleen							
117. Simple peritonitis (nonpuerperal)	37	25	12	34			1
118. Other diseases of digestive system (except cancer, tuberculosis)	24	15	9	23			1
VI. DISEASES OF THE GENITO-URINARY SYSTEM							
119. Acute nephritis	3,237	2,019	1,218	3,083	57	9	65
120. Bright's disease	200	120	80	184	5	1	5
	2,481	1,593	891	2,369	40	7	55
121. Chyluria							
122. Other diseases of the kidneys and annexa	93	57	36	87	1	1	3
123. Calculi of the urinary passages	8	4	4	7	1		
124. Diseases of the bladder	127	106	21	126	1		
125. Diseases of the urethra, urinary abscess, etc.	9	9		9			
126. Diseases of the prostate	128	128		124	2		2
127. Nonvenereal diseases of male genital organs	2	2		2			
128. Uterine hemorrhage (nonpuerperal)	1		1	1			
129. Uterine tumor (noncancerous)	65		65	60	5		
130. Other diseases of the uterus	19		19	19			
131. Cysts and other tumors of the ovary	27		27	27			
132. Salpingitis and other diseases of female genital organs	73		73	67	2		
133. Nonpuerperal diseases of the breast (cancer excepted)	1		1	1			
VII. THE PUERPERAL STATE							
134. Accidents of pregnancy	356		356	321	7	6	1
135. Puerperal hemorrhage	73		73	68	1	2	
136. Other accidents of labor	27		27	20	1	1	
137. Puerperal septicæmia	44		44	43			
138. Puerperal albuminuria and convulsions	79		79	68	2	2	1
139. Puerperal phlegmasia alba dolens, embolus, sudden death	116		116	107	3	1	
140. Following childbirth (not otherwise defined)	7		7	7			
141. Puerperal diseases of the breast	10		10	8			
VIII. DISEASES OF THE SKIN							
142. Gangrene	115	75	40	111	1		2
143. Furuncle	68	42	26	66	1		1
144. Acute abscess	15	11	4	15			
145. Other diseases of the skin and annexa	16	12	4	15			1
	16	10	6	15			

by Sex, Race, Nativity and Age Periods, for California: 1915—Continued.

Japanese	Born in California	White Born in United States	Foreign born	Unknown	Under 1 year	1 to 9 years	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years	60 to 69 years	70 years and over
115	1,232	967	716	38	741	350	91	188	278	301	379	360	471
8	5	2			3	3	1		1	3		2	2
35	16	6		3		25	8	8	6	5	4	2	5
2	2	1		2							1		4
30	71	65		2		1	3	15	34	35	36	31	25
1	34	82	63	3	18	7	3	7	14	16	24	36	69
64	690	18	6		668	127							
11	110	169	106	9		107	7	16	35	38	50	48	125
		2					1	1					
11	121	145	88	4	2	39	51	80	81	51	38	25	11
1	13	32	45	1	7	2		3	4	9	16	22	30
9	89	94	67	3	38	29	8	17	31	30	39	34	50
1	13	26	19	2	2	8	1	11	1	13	5	10	18
1		3	1						1	1	1	2	1
8	40	160	149	7		1	1	7	38	68	108	84	72
	15	34	28			1		1	5	7	23	23	18
4	22	68	55	2	1	4	2	14	18	18	35	20	23
2	9	20	5		2	1	3	6	4	3	4	9	5
	3	10	10				2	2	5	4	6	2	3
23	414	1,566	1,056	47	19	45	42	139	238	395	558	686	1,115
5	62	60	57	5	11	28	14	21	23	31	25	20	29
13	276	1,214	841	38		14	28	78	144	295	463	586	881
1	14	44	29		7	4	1	8	9	12	20	13	19
	1	3	3				1			4	1	1	1
	10	81	34	1	1	1		1	2	4	8	21	89
	1	6	2					1	1	3	2	2	
	3	63	57	1						3	11	31	83
	1	1							1	1			
	1	1								1			
	16	31	12	1					18	21	13	6	7
	1	12	6					4	4	4	4	2	1
	6	15	6					2	5	7	6	3	4
4	23	35	8	1			3	24	31	9	5	1	
			1										1
21	98	120	103				27	164	130	35			
2	17	34	17				3	36	26	3			
5	6	7	7				1	10	13	3			
1	17	10	16				2	17	21	4			
6	23	21	24				9	46	20	4			
5	30	46	31				12	49	43	12			
	3	1	3					2	3	2			
2	2	1	5					4	4	2			
1	20	50	39	2	10	3	2	6	3	9	11	12	59
	1	36	28	1				1	2	2	6	6	51
	3	7	5				1	2		5	1	2	4
	10	3	2		3	3	1	1	1	1	4	2	
1	6	4	4	1	7			2		1		2	4

TABLE 32.—Deaths From Each Specified Disease and Class of Diseases.

Cause of death	Total deaths	Male	Female	White	Negro	Indian	Chinese
IX. DISEASES OF THE BONES	57	36	21	53	2	—	1
146. Diseases of the bones (tuberculosis excepted)	50	31	19	47	1	—	1
147. Diseases of the joints (excepting tuberculosis and rheumatism).....	6	5	1	5	1	—	—
148. Amputations.....	—	—	—	—	—	—	—
149. Other diseases of the organs of locomotion.....	1	—	1	1	—	—	—
X. MALFORMATIONS	274	154	120	254	1	—	1
150. (a) Hydrocephalus.....	24	12	12	23	—	—	—
(b) Congenital malformation of the heart.....	181	105	76	165	1	—	1
(c) Other congenital malformations.....	69	37	32	66	—	—	—
XI. DISEASES OF EARLY INFANCY	1,478	862	616	1,361	24	5	13
151. (a) Premature birth (not stillborn).....	874	495	379	816	13	4	9
(b) Congenital debility, "atrophy," "marasmus," etc.....	328	199	129	294	7	—	1
152. Other diseases peculiar to early infancy*.....	271	166	105	251	4	1	3
153. Lack of care*.....	5	2	3	3	—	—	—
XII. OLD AGE	615	227	288	496	5	6	8
154. Senility.....	515	227	288	496	5	6	8
XIII. AFFECTIONS PRODUCED BY EXTERNAL CAUSES	4,145	3,359	786	3,902	50	19	77
155. Suicide by poison.....	183	125	61	181	1	—	1
156. Suicide by asphyxia.....	142	102	40	137	1	—	2
157. Suicide by hanging or strangulation.....	102	85	17	88	—	1	10
158. Suicide by drowning.....	42	39	3	39	—	—	—
159. Suicide by firearms.....	457	420	37	439	4	1	4
160. Suicide by cutting or piercing instruments.....	67	62	5	61	—	—	2
161. Suicide by jumping from a high place.....	22	18	4	22	—	—	—
162. Suicide by crushing.....	9	9	—	9	—	—	—
163. Other suicides.....	8	8	—	8	—	—	—
164. Poisoning by food.....	55	29	26	54	1	—	—
165. Other acute poisonings.....	62	31	31	61	—	—	—
166. Conflagration.....	87	46	41	81	2	1	1
167. Burns (conflagration excepted).....	119	67	52	110	3	1	—
168. Absorption of deleterious gases (conflagration excepted).....	105	71	34	100	1	2	—
169. Accidental drowning.....	346	317	29	322	5	2	5
170. Traumatism by firearms.....	82	75	7	81	—	—	1
171. Traumatism by cutting or piercing instruments.....	6	5	1	6	—	—	—
172. Traumatism by fall.....	406	276	130	395	2	—	6
173. Traumatism in mines and quarries.....	52	51	1	52	—	—	—
174. Traumatism by machines.....	55	53	2	55	—	—	—
175. (a) Railroad accidents and injuries.....	315	291	24	301	4	3	4
(b) Street car accidents and injuries.....	109	83	26	102	—	—	2
(c) Automobile accidents and injuries.....	446	352	94	426	4	—	6
(d) Injuries by other vehicles.....	172	149	23	153	2	—	7
(e) Landslide, other crushing.....	86	82	4	84	—	—	—
176. Injuries by animals.....	41	37	4	36	—	—	1
177. Starvation.....	9	8	1	8	—	1	—
178. Excessive cold.....	9	7	2	9	—	—	—
179. Effects of heat.....	24	20	4	20	2	—	1
180. Lightning.....	1	1	—	1	—	—	—
181. Electricity (lightning excepted).....	42	38	4	41	—	—	—
182. Homicide by firearms.....	260	218	42	215	14	5	19
183. Homicide by cutting or piercing instruments.....	42	37	5	37	—	2	2
184. Homicide by other means.....	63	47	16	58	3	—	2
185. Fractures (cause not specified).....	7	7	—	6	—	—	—
186. Other external violence.....	109	93	16	104	1	1	1
XIV. ILL-DEFINED DISEASES	11	7	4	11	—	—	—
187. Ill-defined organic disease.....	—	—	—	—	—	—	—
188. Sudden death.....	—	—	—	—	—	—	—
189. (a) Cause of death ill-defined.....	3	—	3	3	—	—	—
(b) Cause of death not specified, or unknown.....	8	7	1	8	—	—	—

*This title includes only deaths under 3 months of age.

by Sex, Race, Nativity and Age Periods, for California: 1915—Concluded.

Japanese	White			Unknown	Under 1 year	1 to 9 years	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years	60 to 69 years	70 years and over
	Born in other states	Born in Calif. foreign born	Born in Calif. foreign born										
1	15	23	14	1	4	6	8	4	8	8	6	9	4
1	14	19	13	1	4	6	8	4	6	7	4	7	4
	1	3	1						2	1	2	1	
		1										1	
18	250	3	1		259	13	1	1					
1	22	1			20	4							
14	163	2			177	4							
3	65		1		62	5	1	1					
72	1,357	6	1		1,478								
82	811	4	1		874								
26	292	2			328								
12	251				271								
2	3				5								
	8	289	188	11								17	498
	8	289	188	11								17	498
97	844	1,298	1,353	407	53	299	249	695	838	698	541	382	390
3	32	73	55	21			3	39	41	28	48	17	10
2	15	54	49	19			2	20	29	39	27	15	10
3	8	21	41	18			2	19	19	21	25	10	6
3	7	13	11	8				3	11	8	8	6	6
9	67	150	154	68			6	74	121	102	82	50	22
4	8	18	27	8				10	13	19	13	4	8
		9	8	5					10	1	4	5	3
		3	3	3				2	2	1	3	1	
	1	3	2	2					2	3	1		2
	28	18	8		5	12	5	3	6	8	6	5	5
1	30	25	5	1	2	23	3	7	9	9	7	1	1
2	23	30	20	8	3	25	5	9	8	10	8	10	9
5	51	35	22	2	4	42	8	18	11	6	9	9	12
2	23	25	45	7	15	1	2	10	19	14	14	15	15
12	107	70	78	67	2	55	55	56	48	55	41	20	14
	32	28	21			10	22	19	15	9	4	2	1
		2	4				1		3		1	1	
3	78	158	147	17	4	21	18	33	42	47	33	61	147
	9	18	30					11	22	14	3	1	1
	13	11	29	2		1	8	17	6	13	5	5	
4	33	103	107	58		5	16	54	93	57	40	24	26
5	18	32	48	4		12	8	10	26	11	17	10	15
10	108	181	117	25		39	35	83	80	69	55	50	35
10	33	52	60	8	1	21	8	32	30	24	22	18	16
2	13	25	40	6		6	4	21	20	22	7	3	3
4	7	14	15			6	2	4	6	3	9	7	4
	2	2	1	3	1	1		1	2	2	1	1	
	3	2	3	1				2	1	3		3	
1	3	5	9	3	2	1		2	6	4	4	4	1
		1						1					
1	11	20	8	2		2	8	11	12	7	1	1	
7	37	53	106	17	2	2	17	67	85	51	24	10	2
1	4	6	19	8			1	19	12	4	4	1	1
	13	13	28	4	6	3		15	14	9	4	8	4
1		1	3	2				2		5			
2	37	30	27	10	6	11	10	21	14	20	11	4	12
	4	4	1	2		3			2	2	1	1	2
	3					3							
	1	4	1	2					2	2	1	1	2

TABLE 33.—Deaths From Each Specified Disease, and Class of

Cause of death	Total deaths.	Male	Female	White.	Negro.	Indian.	Chinese.
ALL CAUSES	37,537	23,068	14,469	35,513	500	170	657
I. GENERAL DISEASES	11,132	6,571	4,561	10,473	201	66	234
1. Typhoid fever	376	258	118	349	8	1	3
2. Typhus fever							
3. Relapsing fever							
4. Malaria	70	41	29	60	3		3
5. Smallpox	1		1	1			
6. Measles	153	77	76	150			1
7. Scarlet fever	90	54	36	80			
8. Whooping-cough	306	144	162	294	2		1
9. (a) Diphtheria	249	126	123	240	1		4
(b) Croup	19	11	8	19			
10. Influenza	138	71	67	129	3	1	3
11. Miliary fever							
12. Asiatic cholera							
13. Cholera nostras	1	1		1			
14. Dysentery	59	33	26	58			1
15. Plague							
16. Yellow fever							
17. Leprosy	3	3		3			
18. Erysipelas	66	38	28	65			
19. Other epidemic diseases	3	1	2	3			
20. Purulent infection and septicæmia	57	41	16	55	1		1
21. Glanders	1	1		1			
22. Anthrax	1		1	1			
23. Rabies	3	2	1	3			
24. Tetanus	28	15	13	26			
25. Mycoses,	1	1		1			
26. Pellagra	28	9	19	28			
27. Beriberi	4	2	2				2
<i>Tuberculosis.</i>							
28. Tuberculosis of the lungs	4,529	3,081	1,498	4,130	130	47	164
29. Acute miliary tuberculosis	114	69	45	99	5	1	2
30. Tuberculosis meningitis	313	198	120	286	4	4	3
31. Abdominal tuberculosis	207	97	110	186	7	1	2
32. Pott's disease	38	26	12	34	2		2
33. White swellings	9	5	4	9			
34. Tuberculosis of other organs	73	51	22	72		1	
35. Disseminated tuberculosis	37	23	14	35		1	1
36. Rickets	11	9	2	11			
37. Syphilis	227	151	76	208	6	2	6
38. Gonococcus infection	10	4	6	8	1		1
<i>Cancer.</i>							
39. Cancer* of the buccal cavity	116	100	16	115			1
40. Cancer* of the stomach, liver	1,070	629	441	1,040	5	4	14
41. Cancer* of the peritonæum, intestines, rectum	344	166	178	339	1		1
42. Cancer* of the female genital organs	354		354	348	3		2
43. Cancer* of the breast	251		251	248	3		
44. Cancer* of the skin	108	84	24	106			2
45. Cancer* of other or unspecified organs	444	294	150	439	3		2
46. Other tumors (except of female genital organs)	11	5	6	8	1		
47. Acute articular rheumatism	71	37	34	64	3		3
48. Chronic rheumatism and gout	89	41	48	87		1	1
49. Scurvy	3	2	1	2			1
50. Diabetes	471	236	235	460	4	1	5
51. Exophthalmic goitre	31	2	29	30	1		
52. Addison's disease	12	8	4	12			
53. Leucæmia	52	29	23	51			
54. Anæmia, chlorosis	174	83	91	173			
55. Other general diseases	37	23	14	36	1		
56. Alcoholism (acute or chronic)	242	222	20	234	3	1	2
57. Chronic lead poisoning	14	14		14			
58. Other chronic occupation poisonings	3	3		3			
59. Other chronic poisonings	10	5	5	10			

Diseases, by Sex, Race, Nativity, and Age Periods for California: 1914.

Japanese.	White				Under 1 year.	1 to 9 years.	10 to 19 years.	20 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 years and over.
	Born in Calif.	Born in other states.	Foreign born.	Unknown.									
628	9,412	13,952	11,177	972	3,964	2,267	1,159	3,216	4,064	4,283	4,825	5,394	8,375
158	2,899	4,198	3,216	160	480	971	559	1,589	1,782	1,638	1,580	1,362	1,221
15	187	116	90	6	2	41	56	102	80	50	23	9	11
4	20	22	15	3	6	5	4	3	9	12	11	6	14
2	1	16	5		32	106	9	4	1		1		1
1	62	23	4		2	67	16	3	1	1			
9	274	16	4		172	131	1					1	1
4	179	44	15	2	7	201	25	9	1	4	2		
	18	1			2	16	1						
2	23	64	41	1	10	6	3	3	7	9	14	17	69
		1											1
	21	18	17	2	10	5		5	3	3	4	8	21
1	25	21	19		12	9		6	7	9	4	8	11
	3				2	1							
16	24	14	1		2	4	4	8	3	9	9	9	9
	1											1	
			1										1
2	2	1				2						1	
2	13	6	7		9	5	3	4	2	2	2		1
		1										1	
2	3	16	8	1				1	4	9	5	8	1
					1			2		1			
56	949	1,706	1,397	79	38	71	283	1,063	1,226	805	511	334	178
7	38	36	24	1	3	15	20	36	19	12	2	4	3
16	212	47	26	1	48	178	24	28	19	10	1	5	
11	71	66	46	3	12	23	20	48	38	27	17	13	9
	18	10	6			9	7	8	5	3	5	1	
	4	2	3			2	1	1	1	1			3
	19	40	13		6	4	4	13	12	11	13	5	5
	11	16	7	1	3	2	5	8	9	3	3	3	1
	8	3			3	7		1					
5	108	60	37	3	78	12	6	15	22	41	41	9	3
	2	4	2		2		1	3	2	1		1	
	10	61	44					2	5	10	24	33	42
7	88	460	479	13		1		10	45	139	256	307	312
3	40	163	133	3		1	2	7	30	46	74	100	84
1	58	184	103	3				9	43	85	99	77	41
	34	140	73	1				4	17	63	73	53	41
	9	64	32	1					3	12	20	22	51
	58	206	175	5		7	8	15	27	63	101	111	112
2	1	6	1			2		1			1	5	2
1	21	30	13		1	7	18	6	8	10	6	5	10
	15	46	25	1			3	6	7	9	13	20	31
	2				2	1							
1	81	226	152	1		11	22	35	28	49	114	99	113
	9	13	8			1	1	4	4	8	8	2	3
	2	9	1					2	4		3	1	2
1	12	22	16	1	1	6	3	8	5	6	10	9	4
1	25	94	54		6	5	2	10	22	28	47	37	18
	17	11	8		9	7	4	3	4	3	1	4	2
2	48	69	90	27				21	52	76	57	28	8
	4	5	5				1		4	5	3	1	
		3							1	1		1	
	4	5	1					2	1	2	2	1	2

TABLE 33.—Deaths From Each Specified Disease, and Class of Diseases,

Cause of death	Total deaths.	Males.	Females.	White.	Negro.	Indian.	Chinese.
II. DISEASES OF THE NERVOUS SYSTEM							
60. Encephalitis	5,570	2,121	1,449	3,438	43	6	47
61. (a) Simple meningitis	65	40	25	64		1	
(b) Cerebrospinal meningitis (undefined)	205	121	84	183	3		1
(c) Cerebrospinal fever	88	53	35	82	1		1
62. Locomotor ataxia	38	25	13	24	2		
63. (a) Acute anterior poliomyelitis	75	61	14	70	1		4
(b) Other diseases of the spinal cord	27	14	13	26		1	
64. Cerebral hæmorrhage, apoplexy	166	90	76	161	2		1
65. Softening of the brain	1,955	1,116	840	1,901	23	2	26
66. Paralysis without specified cause	70	43	27	69			1
67. General paralysis of the insane	244	141	108	238	2		4
68. Other forms of mental alienation	212	171	41	201	3	1	6
69. Epilepsy	79	35	44	75			2
70. Convulsions (nonpuerperal)	108	63	40	97	5	1	
71. Convulsions of infants							
72. Chorea	40	24	16	37			1
73. Neuralgia and neuritis	4	2	2	4			
74. Other diseases of the nervous system	23	5	18	23			
75. Diseases of the eyes and their annexa	123	85	43	127			
76. Diseases of the ears	2	2		2			
	45	30	15	44	1		
III. DISEASES OF THE CIRCULATORY SYSTEM							
77. Pericarditis	6,397	3,042	2,455	6,158	86	12	110
78. Acute endocarditis	44	23	16	41	2		
79. Organic diseases of the heart	555	354	201	529	10		9
80. Angina pectoris	4,164	2,501	1,668	4,002	58	11	75
81. Diseases of arteries, atheroma, aneurysm, etc.	190	134	56	186			1
82. Embolism and thrombosis	1,288	802	486	1,346	15	1	24
83. Diseases of the veins (varices, hemorrhoids, phlebitis, etc.)	119	54	65	113	1		
84. Diseases of lymphatic system (lymphangitis, etc.)	18	10	8	18			
85. Hemorrhage; other diseases of circulatory system	12	6	6	11			1
	7	3	4	7			
IV. DISEASES OF THE RESPIRATORY SYSTEM							
86. Diseases of the nasal fossæ	3,468	2,064	1,399	3,227	54	27	73
87. Diseases of the larynx	1		1	1			
88. Diseases of the thyroid body	24	15	9	21	2		
89. Acute bronchitis	11	3	8	8	1		
90. Chronic bronchitis	189	100	89	174	1	1	6
91. Broncho-pneumonia	228	123	105	221		1	5
92. (a) Lobar pneumonia	991	553	438	924	18	4	19
(b) Pneumonia (undefined)	1,064	664	370	989	18	9	19
93. Pleurisy	632	378	254	579	6	12	11
94. Pulmonary congestion, pulmonary apoplexy	81	51	30	72	5		4
95. Gangrene of the lung	117	71	46	108	2		5
96. Asthma	6	4	2	5			
97. Pulmonary emphysema	98	52	41	90			3
98. Other diseases of the respiratory system (tuberculosis excepted)	4	2	2	4			
	82	28	4	81	1		

*Cancer and other malignant tumors.

by Sex, Race, Nativity, and Age Periods for California: 1914—Continued.

Japanese	White				Under 1 year	1 to 9 years	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years	60 to 69 years	70 years and over
	Born in Calif.	Born in other states	Foreign born	Unknown									
36	563	1,710	1,097	68	140	171	64	122	263	366	550	710	1,145
15	32	10	1	1	6	5	3	9	10	12	4	7	9
19	113	41	25	4	65	58	11	19	19	13	13	6	6
4	57	11	14	1	17	37	12	7	6	4	2	1	2
1	17	12	4	1	5	10	4	10	4	3	2		
	8	38	24						8	15	22	17	13
	20	4	1	1	2	10	6	2		1			
2	22	85	53	1	1	3	4	3	12	14	36	39	50
4	124	1,014	689	44	6	4	2	12	61	146	340	522	851
	5	38	25	1				1	2	2	7	14	44
	13	140	83	2				3	8	14	32	60	127
1	30	104	60	7			2	5	58	81	32	27	7
2	13	36	23	3			1	13	19	15	20	9	2
	35	42	19	1	2	9	5	17	24	15	11	12	8
2	37				29	11							
	2	2				1	2	1					
	5	13	5					1	3		3	7	9
1	28	47	52		2	10	7	11	22	25	20	19	12
	1	1				1		1	1				
	18	20	4	2	3	10	6	6	6	6	6		2
31	520	2,944	2,589	155	6	45	69	165	333	584	967	1,509	2,719
1	8	19	11	3	1	2	3	2	5	7	5	11	8
7	92	235	182	20	2	22	17	43	61	74	105	98	133
18	826	1,871	1,096	109	1	16	46	198	229	398	662	1,062	1,672
3	12	108	65	1				1	9	29	34	41	76
2	59	622	543	22				1	18	52	140	295	782
	14	72	32			1	3	9	9	15	18	23	36
	4	7	7						1	9	1	2	5
	5	6			2	4		1			1	1	3
	4		3						1		1	1	4
83	1,166	1,007	985	70	671	390	63	151	223	298	330	433	805
1	12	6	3			8	12	2	1	2	2	1	1
2	2	4	2					1	2	1	4	2	1
7	93	36	44	1	70	36	1	4	1	3	3	12	59
1	21	95	103	2	3	4	1	2	2	10	24	44	138
26	498	210	197	19	376	183	12	19	32	54	51	93	211
19	282	302	376	20	107	97	18	73	117	133	153	153	293
24	215	212	189	13	140	58	18	33	48	59	52	74	150
	14	34	21	3	2	3	7	7	10	15	16	9	12
2	17	47	44		10	5	1	2	2	5	3	17	72
1	2	2	1						3	2	1		
	6	42	40	2		1		2	4	7	10	17	43
		3	1									2	2
	3	14	13	1			2	5	3	4	4	10	4

TABLE 33.—Deaths From Each Specified Disease, and Class of Diseases.

Cause of death	Total deaths	Male	Female	White	Negro	Indian	Chinese
V. DISEASES OF THE DIGESTIVE SYSTEM							
99. Diseases of the mouth and annexa	3,173	1,873	1,300	2,954	53	16	42
100. Diseases of the pharynx	18	11	7	16	1		
101. Diseases of the œsophagus	48	27	21	45	1		
102. Ulcer of the stomach	3	3		3			
103. Other diseases of the stomach (cancer excepted)	163	114	49	156	1		4
104. Diarrhœa and enteritis (under 2 years)	258	147	111	240	6	3	2
105. Diarrhœa and enteritis (2 years and over)	880	502	387	806	15	3	3
106. Ankylostomiasis	352	198	154	336	5	1	4
107. Intestinal parasites	7	6	1	6			1
108. Appendicitis and typhilitis	345	212	133	326	10	2	2
109. (a) Hernias	96	57	39	95			1
(b) Intestinal obstructions	254	128	126	223	6	5	6
110. Other diseases of the intestines	56	36	20	53			1
111. Acute yellow atrophy of the liver	17	3	14	17			
112. Hydatid tumor of the liver							
113. Cirrhosis of the liver	372	273	99	347	7	1	13
114. Biliary calculi	74	21	53	73			1
115. Other diseases of the liver	148	86	62	140	1		4
116. Diseases of the spleen	5	3	2	5			
117. Simple peritonitis (nonpuerperal)	36	23	13	35		1	
118. Other diseases of digestive system (excepting cancer and tuberculosis)	32	23	9	32			
VI. DISEASES OF THE GENITO-URINARY SYSTEM							
119. Acute nephritis	2,914	1,795	1,119	2,782	49	8	61
120. Bright's disease	211	133	78	197	5		6
121. Chyluria	2,235	1,394	841	2,134	34	6	52
122. Other diseases of the kidneys and annexa	58	39	19	57			1
123. Calculi of the urinary passages	9	4	5	9			
124. Diseases of the bladder	121	106	15	119			2
125. Diseases of the urethra, urinary abscess, etc.	8	8		7		1	
126. Diseases of the prostate	103	103		103			
127. Nonvenereal diseases of male genital organs	8	8		8			
128. Uterine hemorrhage (nonpuerperal)	1		1	1			
129. Uterine tumor (noncancerous)	61		61	53	7	1	
130. Other diseases of the uterus	22		22	21	1		
131. Cysts and other tumors of the ovary	22		22	21	1		
132. Salpingitis and other diseases of female genital organs	55		55	52	1		
133. Nonpuerperal diseases of the breast (cancer excepted)							
VII. THE PUERPERAL STATE							
134. Accidents of pregnancy	344		344	323	3	3	1
135. Puerperal hemorrhage	75		75	72	1		
136. Other accidents of labor	35		35	34			
137. Puerperal septicæmia	19		19	18			
138. Puerperal albuminuria and convulsions	84		84	78		2	
139. Puerperal phlegmasia alba dolens, embolus, sudden death	108		108	101	2	1	1
140. Following childbirth (not otherwise specified)	12		12	12			
141. Puerperal diseases of the breast	11		11	8			
VIII. DISEASES OF THE SKIN							
142. Gangrene	115	76	39	106			3
143. Furuncle	56	40	16	56			
144. Acute abscess	16	11	5	14			1
145. Other diseases of the skin and annexa	22	16	6	18			2
IX. DISEASES OF THE BONES							
146. Diseases of the bones (tuberculosis excepted)	21	9	12	18			
147. Diseases of the joints (excepting tuberculosis and rheumatism)	54	30	24	53			1
148. Amputations	46	26	20	45			1
149. Other diseases of the organs of locomotion	5	2	3	5			
	1	1		1			
	2	1	1	2			

by Sex, Race, Nativity, and Age Periods for California: 1914—Continued.

Japanese	Born in California	White Born in other states	Foreign born	Unknown	Under 1 year	1 to 9 years	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years	60 to 69 years	70 years and over
108	1,289	907	711	47	809	347	92	191	226	344	300	332	472
1	7	5	4		4	3	1	1	1	7		1	1
2	24	9	11	1	6	13	7	11	2	4	2	3	3
2	40	56	57	3			2	16	30	34	30	29	22
7	39	118	78	5	9	16	2	10	16	30	39	33	103
62	765	32	8	1	741	148							
6	96	141	91	8		100	10	12	27	28	35	45	95
1		1	4				1	3	1		2		
5	111	180	79	6	4	27	50	77	49	70	34	21	13
14	37	37	43	1	3	2		4	4	12	19	24	28
14	73	79	66	5	35	25	8	12	21	30	31	33	59
2	9	20	22	2	2	4	1	6	6	5	6	9	17
7		7	3		1	1	1	5	4	3	1	1	
4	53	124	150	11		2	2	9	21	77	99	85	69
11	39	22	1					4	8	8	21	11	22
3	23	70	46	1	3	3	4	15	16	21	28	27	31
1	3	1				1		1	1		2		
7	18	10			1	2	2	4	5	7	5	5	5
8		15	7	2			1	2	6	8	6	5	4
14	371	1,392	977	42	22	43	36	143	248	352	479	621	970
3	67	82	44	4	13	29	5	25	31	17	28	31	32
9	248	1,074	780	32	3	11	28	76	165	275	403	527	747
8		27	20	2	2	2	2	2	6	5	14	7	18
		4	5					1	1	4	1	1	1
3	70	45	1			1			1	2	6	21	90
	3	3	1							2	2	2	2
2	56	44	1							3	10	21	61
4	2	2			4					1		1	2
	1												1
13	21	10						4	14	28	5	6	4
4	13	3	1				1	9	2	1	6	1	2
5	11	5						3	7	5	3	3	1
2	17	28	7					23	21	9	1		1
14	101	119	102	1			26	157	134	27			
2	23	28	21				3	30	36	6			
1	7	11	16				1	10	19	5			
1	3	6	9					7	11	1			
4	24	34	19	1			4	48	30	2			
3	36	32	33				14	54	28	12			
4	5	3					2	4	5	1			
3	4	3	1				2	4	5				
6	16	52	37	1	14	3	3	4	8	5	8	17	53
2	32	21	1					1	2	1	1	7	44
1	2	8	4		1		2	1	2	1	3	3	3
2	3	9	6		3	1	1	2	2	2	4	5	2
3	9	3	6		10	2		2	1			2	4
19	18	14	2	6	8	8	3	2	4	7	9	7	7
17	15	13		6	7	8	2	2	4	6	6	5	5
1	2	1		1								3	2
1	1					1		1					

TABLE 33.—Deaths From Each Specified Disease, and Class of Diseases.

Cause of death	Total deaths	Male	Female	White	Negro	Indian	Chinese
X. MALFORMATIONS							
150. (a) Hydrocephalus	29	12	17	27	1	—	1
(b) Congenital malformation of heart	221	119	102	207	2	—	4
(c) Other congenital malformations	73	41	32	72	—	1	—
XI. DISEASES OF EARLY INFANCY							
151. (a) Premature birth	849	475	374	794	13	—	4
(b) Congenital debility, "atrophy," "marasmus," etc.	260	164	96	243	4	—	4
152. Other diseases peculiar to early infancy	333	185	148	313	2	1	2
153. Lack of care	12	4	8	10	—	—	—
XII. OLD AGE							
154. Senility	568	306	267	577	6	7	3
	568	306	267	577	6	7	3
XIII. AFFECTIONS PRODUCED BY EXTERNAL CAUSES							
155. Suicide by poison	172	122	49	166	3	—	2
156. Suicide by asphyxia	115	87	28	113	1	—	1
157. Suicide by hanging or strangulation	108	82	21	82	—	1	10
158. Suicide by drowning	33	21	12	31	—	—	2
159. Suicide by firearms	410	386	24	380	4	2	6
160. Suicide by cutting or piercing instruments	54	50	4	48	—	1	3
161. Suicide by jumping from a high place	9	8	1	9	—	—	—
162. Suicide by crushing	1	1	—	1	—	—	—
163. Other suicides	15	13	2	15	—	—	—
164. Poisoning by food	45	26	17	42	1	1	1
165. Other acute poisonings	94	50	44	92	—	—	—
166. Conflagration	73	53	20	58	3	2	2
167. Burns (conflagration excepted)	162	74	88	150	1	4	—
168. Absorption of deleterious gases (conflagration excepted)	109	75	34	106	—	—	3
169. Accidental drowning	399	359	40	374	6	3	7
170. Traumatism by firearms	106	91	15	101	1	1	1
171. Traumatism by cutting or piercing instruments	8	7	1	7	—	—	1
172. Traumatism by fall	384	274	110	373	—	—	5
173. Traumatism in mines and quarries	88	38	—	37	—	—	1
174. Traumatism by machines	67	66	1	65	—	—	1
175. (a) Railroad accidents and injuries	304	280	24	286	6	—	3
(b) Street car accidents and injuries	141	117	24	140	—	—	—
(c) Automobile accidents and injuries	295	244	51	289	—	—	3
(d) Injuries by other vehicles	153	138	15	142	1	—	3
(e) Landslide, other crushing	96	94	1	92	—	—	1
176. Injuries by animals	39	31	8	37	—	—	—
177. Starvation	2	1	1	2	—	—	—
178. Excessive cold	5	3	2	3	—	2	—
179. Effects of heat	27	25	2	23	1	1	2
180. Lightning	—	—	—	—	—	—	—
181. Electricity (lightning excepted)	44	43	1	44	—	—	—
182. Homicide by firearms	275	208	67	240	18	5	5
183. Homicide by cutting or piercing instruments	35	30	5	28	2	—	1
184. Homicide by other means	58	40	18	51	2	—	3
185. Fractures (cause not specified)	7	7	—	7	—	—	—
186. Other injuries	111	100	11	105	2	—	1
XIV. ILL-DEFINED DISEASES							
187. Ill-defined organic disease	—	—	—	—	—	—	—
188. Sudden death	1	1	—	1	—	—	—
(c) Automobile accidents and injuries	295	244	51	289	—	—	3
(b) Cause of death not specified, or unknown	4	3	1	4	—	—	—

by Sex, Race, Nativity, and Age Periods for California: 1914—Continued.

Japanese	White				Under 1 year	1 to 9 years	10 to 19 years	20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years	60 to 69 years	70 years and over
	Born in California	Born in other states	Foreign born	Unknown									
8	304	2			308	15							
25	2				23	6							
8	207				215	6							
72					70	3							
64	1,357	2	1		1,454								
38	794				849								
9	242	1			260								
15	311	1	1		333								
2	10				12								
6		333	229	9								23	570
6		333	229	9								23	570
106	794	1,266	1,264	415	54	261	239	740	833	600	532	347	322
1	18	74	48	26			5	47	37	34	25	14	10
	14	29	47	23			1	12	25	25	20	15	8
10	3	30	36	13				9	25	23	22	18	6
	5	10	7	9			1	5	8	6	7	5	1
18	68	127	124	61			12	76	100	76	78	52	16
2	5	14	26	3				6	11	23	10	3	1
	1	3	4	1				1	2	2	1	1	2
				1					1				
	1	4	7	3				2	5	7			1
	13	26	4		4	7		5	7	1	5	9	7
2	23	39	26	4	2	20	5	25	16	10	12	1	3
8	14	15	23	6	4	8		6	8	11	16	7	9
7	58	48	39	5	4	61	10	14	23	14	11	10	15
	33	25	37	11	20	4	2	18	14	11	17	13	10
9	107	87	113	67	2	49	56	82	67	61	44	24	14
2	48	37	13	3		12	34	24	18	6	6	2	4
	1	3	2	1		1	1		2		1	3	
6	58	159	138	23	10	18	19	27	45	60	39	43	123
	1	6	27	3				7	16	10	2	3	
1	14	22	28	1		4	9	13	14	14	9	3	1
9	42	74	96	75		7	10	60	90	56	34	22	14
1	23	55	53	9		4	6	17	33	17	24	22	18
3	72	145	62	10	1	21	26	57	54	42	48	26	20
7	40	49	48	5		17	10	23	28	22	20	14	19
2	12	22	50	8		2	3	30	25	20	9	3	3
2	12	15	8	2		10	3	2	4	4	7	4	5
	1	1				1						1	
	1	2				1		1		1	1	1	
	2	8	7	6	1	1		3	6	5	5	4	2
	8	18	14	4		1	2	19	15	4	3		
7	53	62	107	18		2	9	86	92	52	20	10	4
4	9	6	11	2		2	1	12	8	8	2	2	
2	10	17	20	4	2		3	15	20	10	5	2	1
		1	5	1				2		1		1	3
3	29	34	35	7	4	8	7	25	14	24	20	7	2
	8	2	5	2		4		1	2	5	3	1	1
			1										1
6	2	3	3	1		3		1	2	4	1	1	
2		1	1	1		1				1	2		

TABLE 34.—Deaths from Certain Principal Causes,

Cause of death	The State	Northern Coast				
		Del Norte	Humboldt	Lake	Mendocino	Napa
1915.						
All causes	39,026	14	370	81	309	551
Typhoid fever	276		2	1		
Malarial fever	45				1	
Smallpox	3					
Measles	132		6	1	4	
Scarlet fever	53					
Whooping-cough	124		2		1	2
Diphtheria and croup	310				1	
Influenza	181		3	2	2	1
Plague	1					
Other epidemic diseases	116				1	
Tuberculosis of lungs	4,752	1	19	5	28	54
Tuberculosis of other organs	799		14	3		9
Cancer	2,776		22	3	12	26
Other general diseases	1,645		18	1	10	18
Meningitis	273		4		2	5
Other diseases of nervous system	3,151	2	25	6	42	86
Diseases of circulatory system	7,251	5	73	11	53	132
Pneumonia and broncho-pneumonia	3,063		19	12	20	62
Other diseases of respiratory system	728		5	8	3	14
Diarrhea and enteritis, under 2 years	795		5	1	6	
Diarrhea and enteritis, 2 years and over	415		8	2	1	4
Other diseases of digestive system	1,949		17	7	21	15
Bright's disease and nephritis	2,684	1	20	3	22	44
Childbirth	356	1	4	1	4	
Diseases of early infancy	1,478	1	15	2	11	7
Suicide	1,035		14		6	17
Other violence	3,110	2	48	5	31	34
All other causes	1,525	1	17	7	14	29
1914.						
All causes	37,537	18	414	57	330	497
Typhoid fever	376		4		4	1
Malarial fever	70					
Smallpox	1					
Measles	153		6			
Scarlet fever	90			1	1	
Whooping-cough	306		6		6	2
Diphtheria and croup	268		5		1	5
Influenza	138		3		2	
Other epidemic diseases	132		1			2
Tuberculosis of lungs	4,729	5	26	6	39	61
Tuberculosis of other organs	791		7		6	3
Cancer	2,687	2	43	5	10	33
Other general diseases	1,591		15	2	14	21
Meningitis	331		6	1		5
Other diseases of nervous system	3,239	1	33	6	48	85
Diseases of circulatory system	6,397	3	60	10	48	93
Pneumonia and broncho-pneumonia	2,677		24	3	27	40
Other diseases of respiratory system	783		5	4	4	6
Diarrhea and enteritis, under 2 years	889	1	6	1	5	1
Diarrhea and enteritis, 2 years and over	372		3		1	5
Other diseases of digestive system	1,932	1	18	4	16	22
Bright's disease and nephritis	2,446	2	20	3	29	28
Childbirth	344	1	3	1	4	1
Diseases of early infancy	1,454		30	2	10	5
Suicide	912		10		5	12
Other violence	3,076	2	54	6	39	23
All other causes	1,570		26	2	11	43

for Counties Arranged Geographically: 1915 and 1914.

California

counties

Interior counties

Sonoma	Trinity	Butte	Colusa	Glenn	Lassen	Siskiyou	Nevada	Placer	Plumas	Shasta	Sierra	Siskiyou	Sutter
720	43	368	108	70	60	39	219	251	70	231	37	180	72
4		12	6	3				2		3		3	1
		5		1						7		1	
3		2		2	3		2						
4			1					1		1			
3		4	1					3		2		1	1
5		2		1			1						1
8		4	2		1		2	4				6	
4		1					2	1		1	1		1
61	2	31	10	4	4	2	29	47	6	23	1	14	7
15		3	1	1	1	1	3	7	2	1		3	1
46	1	26	5	3	1		13	9		13	3	6	6
40	2	19	3	3	2	2	7	6	3	7	2	8	7
3			1		1		1			1			1
72	5	25	6	3	3	3	20	20	4	20	1	3	5
150	16	67	16	13	9	7	43	37	6	37	4	51	12
53	1	37	16	6	6	4	20	24	6	22	4	12	7
12		4	4	1			4	8	3	6	2		1
8		3	3	2	2	1		2		3			2
14		3	1					2	1	3	2		2
53	1	20	4	3	4	3	11	13	5	5	1	10	
39	3	24	3	1	7	3	11	18	1	14	2	10	6
4	2	2		1			1	2		2		4	1
27	4	12	2	5	3	4	10	4	3	7		9	3
13		8	4	4			6	5	5	7	1	2	1
42	6	35	12	8	11	6	22	27	19	35	10	28	3
37		19	7	5	2	2	12	9	6	11	3	9	3
655	43	340	85	71	67	68	223	221	44	218	42	213	70
10	1	4	6	2	1					2		3	
2	1	4		2	1		2	2	1	7		2	1
		4					1			1	1		
1		4				4	1	1					
1		3	2	1		2	1	2		4	1	3	
3		3					3	1		2			
4		3	3	1		1				1	1	3	
5		4					1			1			
52	3	29	10	2	3	3	20	46		18		22	6
16		6	1		2		2	4	2	2	2	2	1
62	2	22	3	4	4	2	14	13	1	13	2	8	5
38	2	14	7	3	2	1	16	11	4	14	4	12	1
3		4		1	1			5		4		3	1
77	4	29	10	6	2	10	25	14	5	16	1	18	6
106	12	53	13	14	11	6	51	41	5	35	9	41	12
54	1	23	5	8	7	7	14	5	4	13	1	22	10
23	1	8	1	2	3	1	5	6		2		5	2
9		6	1	1		2	3	4		3		2	1
3		3	1			1	3	2		3	1	3	
35	2	22	3	3	3	9	13	8		8	2	9	4
28	1	15	7	7	2	2	10	11		15	3	4	5
5		3			2	1	1	1		3	1	3	
28	1	13	1	3	2	7	8	4	1	3		8	2
17	2	5			3		1	1	5	7	2	4	2
43	7	42	7	5	15	6	16	33	12	29	5	18	10
30	3	19	4	6	3	3	12	6	4	12	6	18	1

TABLE 34.—Deaths from Certain Principal Causes, for Counties.

Cause of death	Northern California—Cont'd		Central			
	Interior counties—Cont'd		San Francisco	Other bay counties		
	Tehama	Yuba		Alameda	Contra Costa	Marin
1915.						
All causes	145	163	7,259	3,677	389	279
Typhoid fever	3	2	41	30	6	1
Malarial fever	1	2	2			
Smallpox						1
Measles	2		17	11	1	
Scarlet fever			7	2		
Whooping-cough			20	15	2	2
Diphtheria and croup	1	2	114	22	4	2
Influenza	1	1	9	4	2	2
Plague					1	
Other epidemic diseases	1	2	19	12	1	
Tuberculosis of lungs	16	11	784	890	32	31
Tuberculosis of other organs	3	3	170	89	3	6
Cancer	7	8	586	326	21	29
Other general diseases	3	12	312	162	19	21
Meningitis		1	43	19	2	3
Other diseases of nervous system	22	8	452	288	25	26
Diseases of circulatory system	25	2	1,536	822	59	40
Pneumonia and broncho-pneumonia	16	14	644	384	30	27
Other diseases of respiratory system	3	5	144	62	4	6
Diarrhea and enteritis, under 2 years	2	3	96	64	9	5
Diarrhea and enteritis, 2 years and over	2	4	44	32	1	1
Other diseases of digestive system	4	10	421	182	18	16
Bright's disease and nephritis	12	14	500	221	27	8
Childbirth		1	56	36	5	5
Diseases of early infancy	6	3	219	112	31	5
Suicide	3	9	271	70	10	8
Other violence	10	17	495	214	66	17
All other causes	2	6	257	108	10	8
1914.						
All causes	147	134	6,940	3,559	385	289
Typhoid fever	4	4	57	27	9	
Malarial fever		2	5	2	1	
Smallpox						
Measles	1		42	31	9	
Scarlet fever			4	4	3	
Whooping-cough			56	54	6	1
Diphtheria and croup			86	37	7	1
Influenza		1	10	7		3
Other epidemic diseases			23	9	3	2
Tuberculosis of lungs	19	12	778	334	35	43
Tuberculosis of other organs	2	3	169	70	3	6
Cancer	10	10	572	271	19	14
Other general diseases	7	3	287	163	18	13
Meningitis	1		55	28	2	
Other diseases of nervous system	19	7	419	310	22	18
Diseases of circulatory system	30	29	1,409	732	57	65
Pneumonia and broncho-pneumonia	8	8	569	290	45	19
Other diseases of respiratory system	2	2	161	89	9	2
Diarrhea and enteritis, under 2 years	3	2	94	60	6	3
Diarrhea and enteritis, 2 years and over	3	2	43	27	3	1
Other diseases of digestive system	9	9	404	169	10	13
Bright's disease and nephritis	3	8	472	243	16	13
Childbirth	2	2	56	39	4	1
Diseases of early infancy	5	5	235	129	20	22
Suicide	1	5	233	96	7	12
Other violence	16	13	476	196	59	27
All other causes	2	7	225	132	12	10

Arranged Geographically: 1915 and 1914—Continued.

California

Coast counties						Interior counties							
San Mateo	Monterey	San Benito	San Luis Obispo	Santa Clara	Santa Cruz	Alpine	Amador	Calaveras	El Dorado	Fresno	Inyo	Kern	Kings
361	296	108	232	1,562	410	2	120	96	114	1,071	43	465	221
	3		2	8	1		2	2		11		5	2
				1	1			3		3		3	2
3	5	2	1	10	1		1						6
1		1		2	1					3			2
3	1			8			4		1	2			3
7	2	1		7	2					5		11	
1	2	2	2	10	6		2	1		7			1
				5	1					10			1
38	14	13	25	168	39		15	13	14	172	6	68	17
7	10	2	2	29	7			1		21		9	6
19	24	3	9	105	32		7	6	12	61	1	29	14
12	12	8	6	61	18		4	4	2	43	1	17	10
6	2			21	1		2		1	7		6	3
28	36	7	19	210	40		11	13	7	59	6	15	18
52	56	14	61	340	101		11	20	29	148	4	50	30
35	27	13	27	105	22		7	4	5	99	2	32	13
13	7	2	3	36	8		2	2	4	16	2	11	4
11	3	2	6	23	7		3	2	1	39	1	13	12
2	4	4	1	30	3		2	1	2	15		1	2
15	18	8	13	68	17		6	5	4	72	5	24	6
20	15	5	7	99	26	1	10	4	11	64	3	28	12
3	4			14	4				1	15	1	6	2
15	11	8	5	37	12		9	1	2	61	1	28	22
10	4	1	7	25	11		5	1	2	25		15	4
46	26	5	25	88	30	1	13	13	11	92	5	74	15
14	12	7	11	57	19		4	2	5	21	5	20	14
343	280	116	220	1,477	379	2	136	92	109	1,001	42	468	191
2	1	1	3	11	1		3	1	1	14	2	7	4
	1		1	8			2			6		5	1
1	2			9	1		1			4			
				2						27		2	
10	7	2	1	16	1		3	1	3	12		11	4
2				3			1			12		8	
2				5	3			2	4	15	1	1	1
1	2			4	2					6			1
33	24	18	19	156	26	1	26	8	12	131	5	52	18
10	7	4	3	30	5		1	2	2	23		9	9
22	16	8	14	118	30		7	2	10	66	2	25	12
14	13	6	7	62	16		6	2	2	33	1	14	11
3	3	1		9	4		3	1	1	13	1	3	
32	33	9	17	203	37		12	14	9	63	5	19	16
53	50	25	51	278	90		11	19	23	114	3	47	23
34	18	9	14	94	23		10	5	7	83	3	41	15
8	8	2	5	23	13		1	8	1	21		7	3
7	11	8	9	28	8		7	2		83		17	8
3	2	1	4	21	4			1	3	16		3	1
20	18	6	16	36	22		4	4	4	50	1	29	14
13	11	2	7	107	20		12	1	10	64	3	15	12
1	3	1	8	12	3		1			15		6	2
12	6	4	7	48	16		3	1	1	41	2	28	6
9	9	1	1	25	4	1	4	3		27	1	19	5
40	28	6	23	77	33		14	9	10	110	9	82	16
11	12	7	10	47	17		4	5	6	42	3	18	9

TABLE 34.—Deaths from Certain Principal Causes, for Counties,

Cause of death	Central				
	Interior				
	Madera	Mari- posa	Merced	Mono	Sacra- mento
1915.					
All causes	88	32	217	6	1,165
Typhoid fever			1		21
Malarial fever	1		1		1
Smallpox					
Measles					1
Scarlet fever			2		
Whooping-cough	1		3		
Diphtheria and croup		1	1		6
Influenza	1				5
Plague					
Other epidemic diseases		1	2		2
Tuberculosis of lungs	10	3	18		128
Tuberculosis of other organs	3		5		29
Cancer	6		7		79
Other general diseases	4	1	9		32
Meningitis	1	2	2		6
Other diseases of nervous system	9	1	15	1	60
Diseases of circulatory system	7	5	26		192
Pneumonia and broncho-pneumonia	5	1	16		88
Other diseases of respiratory system	1	1	6		20
Diarrhea and enteritis, under 2 years	3		9		30
Diarrhea and enteritis, 2 years and over	1		4		14
Other diseases of digestive system	7	2	9		63
Bright's disease and nephritis	3		13		81
Childbirth	1	1	6		12
Diseases of early infancy	6		11		46
Suicide	1		12		41
Other violence	13	11	29	5	140
All other causes	4	2	10		48
1914.					
All causes	85	33	182	5	1,225
Typhoid fever	1	2	2		21
Malarial fever					5
Smallpox					
Measles					7
Scarlet fever			1		2
Whooping-cough			3		11
Diphtheria and croup					5
Influenza		1			4
Other epidemic diseases	1				5
Tuberculosis of lungs	5	4	21	1	149
Tuberculosis of other organs			4		21
Cancer	5	1	11		70
Other general diseases	2		9		64
Meningitis	2		1		5
Other diseases of nervous system	6	2	12		81
Diseases of circulatory system	13	3	25		177
Pneumonia and broncho-pneumonia	12	1	14		90
Other diseases of respiratory system	1		4		21
Diarrhea and enteritis, under 2 years	2		2		27
Diarrhea and enteritis, 2 years and over	2		3		16
Other diseases of digestive system	2		13	1	82
Bright's disease and nephritis	6	2	7		93
Childbirth	1	1	4		9
Diseases of early infancy	3		8		70
Suicide	3		1	1	30
Other violence	10	11	24		114
All other causes	2	3	13	2	40

Arranged Geographically: 1915 and 1914—Concluded.

California							Southern California						
counties							Other counties						
San Joaquin	Colano	Stanis- laus	Tulare	Tuol- umne	Yolo	Los Angeles	Im- perial	Orange	River- side	San Bernar- dino	San Diego	Santa Bar- bara	Ven- tura
1,148	324	350	445	90	211	9,590	270	620	468	1,148	1,356	381	281
11	3	8	3	1	1	38	3	8	6	3	7	5	1
1		1	1		1	2			3		1		
1	1	4			4	26	2	2	2	1	1	3	1
3			2			14	2			3		1	
1		1	1		2	21	1	1	2	7	1	1	
3	2	1	4		2	66	6	6	1	3	14	1	2
1		4	6	3	1	40		8	1	4	13	4	2
5			3		1	27	1	2	1		5		1
172	32	35	53	9	11	1,406	44	69	96	216	179	33	34
20	4	4	5		3	187	3	16	11	34	27	7	8
66	22	21	22	6	14	750	3	43	25	47	120	29	12
33	14	15	17	5	12	403	12	31	20	42	64	16	10
20	1	1	6	1	1	59	3	6	5	6	10	3	4
149	37	32	32	7	20	707	9	72	27	168	103	47	14
132	61	53	60	14	34	1,781	13	86	50	147	277	78	43
98	28	16	31	16	12	657	17	32	29	82	59	17	19
23	8	10	11	6	6	151	5	15	6	16	20	8	6
17	7	8	19		4	197	16	26	17	40	25	4	18
23	1	1	10		7	105	6	6	4	15	21	7	6
46	15	10	21	5	17	451	14	23	16	48	71	16	10
112	25	20	27	7	5	796	10	43	18	53	92	21	20
8	5	8	7		2	86	5	4	4	11	9	3	2
31	7	21	27	1	10	378	18	44	38	43	41	19	17
36	5	7	12	3	6	232	6	13	14	19	37	6	11
87	40	45	28	11	31	597	62	42	50	96	99	41	33
49	6	12	25	4	4	412	9	22	23	43	60	14	12
1,066	342	316	419	104	193	9,038	319	602	440	1,139	1,300	395	258
22	3	4	5	1	7	52	17	13	6	12	10	3	2
2		1	2			5							1
1	2	5			1	12	3		1	5		2	
		3	9		1	8		4	1	4	2		
2	2	2	4		1	28	10	6	4	3	3	3	2
2	1	2	3		3	54	3	1	3	5	5		1
3		1	4	4		27	1	8	2	1	2	2	1
6		1	3			32	2	4	4	3	2	2	1
125	26	26	47	13	14	1,373	36	57	89	226	150	37	28
23	3	2	10	1	3	262	9	20	12	24	31	9	3
60	20	19	23	5	13	763	5	40	21	66	111	24	14
34	16	11	19	3	9	364	7	34	24	41	64	13	12
15	4	3	4	1		79	2	15	10	7	11	6	4
154	38	36	40	7	14	740	10	61	30	174	107	46	21
140	64	35	52	17	30	1,496	29	63	51	113	234	58	32
85	25	21	34	11	13	544	21	43	24	72	67	18	16
16	7	11	6	5	5	191	2	11	9	17	18	11	10
11	9	4	24		7	212	30	33	21	47	29	16	18
15	5	3	6	1	2	84	2	8	5	14	10	6	3
58	15	24	16	4	11	452	4	32	19	31	63	31	7
90	23	21	23	12	11	645	10	42	25	40	106	20	21
8	8	4	3	1	1	78	3	4	7	12	9	4	5
35	17	22	16	2	6	374	22	26	21	41	42	17	13
22	10	5	7	1	5	194	10	10	9	18	32	11	2
94	40	28	39	8	29	631	70	41	39	98	126	34	34
43	9	18	22	7	7	438	11	26	12	35	66	19	8

TABLE 35.—Proportion per 1,000 Total Deaths from Certain Principal Causes, for

Cause of death	The State	Northern	
		Coast	
		Humboldt	Mendocino
1915.			
All causes	1,000.0	1,000.0	1,000.0
Typhoid fever	7.1	5.4	
Malarial fever	1.1		3.2
Smallpox	0.1		
Measles	3.4	16.2	13.0
Scarlet fever	1.4		
Whooping-cough	3.2	5.4	3.2
Diphtheria and croup	7.9		3.2
Influenza	4.6	8.1	6.5
Plague	*		
Other epidemic diseases	3.0		3.2
Tuberculosis of lungs	121.8	51.4	90.6
Tuberculosis of other organs	20.5	37.8	
Cancer	71.1	86.5	38.9
Other general diseases	42.1	48.7	32.4
Meningitis	7.0	10.8	6.5
Other diseases of nervous system	30.7	67.6	135.9
Diseases of circulatory system	185.8	197.3	171.5
Pneumonia and broncho-pneumonia	78.5	51.4	64.7
Other diseases of respiratory system	18.7	13.5	9.7
Diarrhea and enteritis, under 2 years	20.4	13.3	19.4
Diarrhea and enteritis, 2 years and over	10.6	21.6	3.2
Other diseases of digestive system	49.9	46.0	68.0
Bright's disease and nephritis	68.8	54.1	103.6
Childbirth	9.1	10.8	13.0
Diseases of early infancy	37.9	40.5	35.6
Suicide	33.5	37.8	19.4
Other violence	79.7	129.7	110.0
All other causes	30.1	45.9	45.3
1914.			
All causes	1,000.0	1,000.0	1,000.0
Typhoid fever	10.0	9.7	12.1
Malarial fever	1.9		
Smallpox	*		
Measles	4.1	14.5	
Scarlet fever	2.4		3.0
Whooping-cough	8.2	14.5	13.2
Diphtheria and croup	7.1	12.1	3.0
Influenza	3.7	7.2	6.1
Other epidemic diseases	3.5	2.4	
Tuberculosis of lungs	120.6	62.8	113.2
Tuberculosis of other organs	21.1	16.9	13.2
Cancer	71.6	103.9	30.3
Other general diseases	42.4	36.2	42.4
Meningitis	8.8	14.5	
Other diseases of nervous system	36.3	79.7	145.5
Diseases of circulatory system	170.4	144.9	145.5
Pneumonia and broncho-pneumonia	71.3	58.0	51.8
Other diseases of respiratory system	20.9	12.1	12.1
Diarrhea and enteritis, under 2 years	23.7	14.5	15.3
Diarrhea and enteritis, 2 years and over	9.4	7.2	3.0
Other diseases of digestive system	51.5	43.5	48.5
Bright's disease and nephritis	65.2	48.3	87.9
Childbirth	9.2	7.2	12.1
Diseases of early infancy	38.7	72.5	30.3
Suicide	24.3	24.2	15.1
Other violence	81.9	130.4	118.2
All other causes	41.8	62.8	32.3

*Less than one-tenth of 1 per thousand.

Selected Counties (Reporting 300 Deaths) Arranged Geographically: 1915 and 1914.

California				Central California				
counties		Interior counties	San Francisco	Other bay counties		Coast counties		
Napa	Sonoma	Butte	Alameda	Contra Costa	San Mateo	Santa Clara	Santa Cruz	
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
	5.6	32.6	5.7	8.2	15.4		5.1	2.4
		13.6	0.8					2.4
	4.2	5.4	2.3	3.0	2.6	8.3	6.4	2.4
	5.6		1.0	0.5		2.8	1.3	2.4
3.6	4.2	10.9	2.8	4.1	5.1	8.3	5.1	
	6.9	5.4	15.7	6.0	10.3	19.4	4.5	4.9
1.8	11.1	10.9	1.2	1.1	5.1	2.8	6.4	14.6
				2.6				
	5.6	2.7	2.6	3.3	2.6		3.2	2.4
96.0	84.7	84.2	106.0	106.0	82.3	105.3	107.6	96.1
16.3	20.8	8.2	23.4	21.2	7.7	19.4	18.6	17.1
47.2	63.9	70.7	80.7	88.6	54.0	52.6	67.2	78.1
32.7	55.6	51.6	43.0	41.1	48.8	33.2	39.1	43.9
9.1	4.2		5.9	5.2	5.1	16.6	13.4	2.4
156.1	100.0	67.9	62.3	78.3	64.3	77.6	134.4	97.6
230.6	208.3	182.1	211.6	223.5	151.7	144.0	217.7	246.3
112.5	73.6	100.5	88.7	104.4	77.1	97.0	67.2	53.7
25.4	16.7	10.9	19.8	16.9	10.3	36.0	23.1	19.5
	11.1	8.2	13.2	17.4	23.1	30.5	17.9	17.1
7.3	19.4	8.2	6.1	8.7	2.6	5.5	12.8	7.3
29.0	73.6	54.4	58.0	49.5	46.3	41.6	43.5	41.5
79.9	54.2	65.2	68.9	60.1	69.4	55.4	63.4	63.4
	5.5	5.4	7.7	9.8	12.8	8.3	9.0	9.8
12.7	37.5	32.6	30.2	30.5	79.7	41.5	23.7	29.8
30.8	18.0	21.7	37.3	19.0	25.7	27.7	16.0	26.8
61.7	58.3	95.1	68.2	58.2	169.7	127.4	56.3	73.2
36.3	51.4	51.6	35.4	29.4	25.7	38.8	36.5	46.4
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
2.0	15.3	11.8	8.2	7.6	23.4	5.8	7.5	2.6
	3.1	11.8	0.7	0.6	2.6		2.0	
		11.8	6.1	8.7	23.4	2.9	6.1	2.6
	1.5	11.8	0.6	1.1	7.8		1.4	
4.0	1.5	8.8	8.1	15.2	15.6	29.2	10.8	2.6
10.1	4.6	8.8	12.4	10.4	18.2	5.8	2.0	
	6.1	8.8	1.4	2.0		5.8	3.4	7.9
4.0	7.6	11.8	3.3	2.5	7.8	2.9	2.7	5.3
122.7	79.4	85.3	112.1	93.8	90.9	96.2	106.6	68.6
6.0	24.4	17.6	24.3	19.7	7.8	29.2	20.3	13.2
66.4	94.7	64.7	82.4	76.1	49.3	64.2	79.9	79.2
42.3	58.0	41.2	41.4	47.2	46.7	40.8	42.0	42.2
10.1	4.6	11.8	7.9	7.9	5.2	8.8	6.1	10.6
171.0	117.6	85.3	60.4	87.1	57.1	98.3	137.4	97.6
187.1	161.8	155.9	208.0	205.7	148.0	154.5	188.2	237.5
80.5	82.4	67.7	82.6	81.5	116.9	99.1	63.7	60.7
12.1	35.1	8.8	23.2	25.0	23.4	23.3	15.6	34.3
2.0	13.7	17.6	13.5	16.8	15.6	20.4	19.0	21.1
10.1	4.6	8.8	6.2	7.6	7.8	8.8	14.2	10.6
44.3	53.4	64.7	58.2	47.5	26.0	58.3	58.2	58.0
56.3	42.8	44.1	68.0	69.7	41.6	37.9	72.5	52.8
2.0	7.6	8.8	8.1	10.0	10.4	2.9	8.1	7.9
10.1	42.8	38.2	33.9	30.2	51.9	35.0	32.5	42.2
24.1	26.0	14.7	33.6	27.0	18.2	26.2	16.9	10.5
46.3	65.6	123.5	68.6	55.1	153.2	116.6	52.1	87.1
86.5	45.8	55.9	32.4	37.1	31.2	32.1	31.8	44.9

TABLE 35.—Proportion per 1,000 Total Deaths from Certain Principal Causes, for Con

Cause of death	Central			
	Interior			
	Fresno	Kern	Sacra- mento	San Joaquin
1915.				
All causes	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	10.3	10.7	18.0	9.6
Malarial fever	2.8	6.4	0.9	0.9
Smallpox				
Measles			0.9	0.9
Scarlet fever	2.8			2.6
Whooping-cough	1.9			0.9
Diphtheria and croup	4.7	23.7	5.1	2.6
Influenza	6.5		4.3	0.9
Plague				
Other epidemic diseases	9.3		1.7	4.3
Tuberculosis of lungs	160.6	146.2	109.9	149.8
Tuberculosis of other organs	19.6	19.4	24.9	17.4
Cancer	57.0	62.4	67.8	57.5
Other general diseases	40.2	36.6	44.6	28.7
Meningitis	6.5	12.9	5.1	17.4
Other diseases of nervous system	55.1	32.3	51.5	129.8
Diseases of circulatory system	138.2	107.5	161.8	115.0
Pneumonia and broncho-pneumonia	92.4	68.8	75.5	81.3
Other diseases of respiratory system	14.9	23.7	17.2	20.0
Diarrhea and enteritis, under 2 years	36.4	28.0	25.8	14.8
Diarrhea and enteritis, 2 years and over	14.0	2.1	12.0	20.0
Other diseases of digestive system	67.2	51.6	54.1	40.1
Bright's disease and nephritis	59.8	60.2	69.5	97.6
Childbirth	14.0	12.9	10.3	7.0
Diseases of early infancy	57.0	60.2	39.5	27.0
Suicide	23.3	32.3	35.2	31.4
Other violence	85.9	159.1	120.2	75.8
All other causes	19.6	43.0	41.2	22.7
1914.				
All causes	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	12.8	15.0	19.6	20.6
Malarial fever	5.5	10.7	4.1	1.9
Smallpox				
Measles	3.7		5.7	0.9
Scarlet fever	24.7	4.3	1.6	
Whooping-cough	11.0	23.5	9.0	1.9
Diphtheria and croup	11.0	17.1	4.1	1.9
Influenza	13.8	2.1	3.3	2.8
Other epidemic diseases	3.5		4.1	5.6
Tuberculosis of lungs	120.1	111.1	121.6	117.3
Tuberculosis of other organs	21.1	19.2	17.1	21.6
Cancer	60.5	53.4	57.1	56.3
Other general diseases	30.2	29.9	52.2	31.9
Meningitis	11.9	6.4	4.1	14.1
Other diseases of nervous system	57.7	40.6	66.1	144.5
Diseases of circulatory system	104.5	100.4	144.5	131.3
Pneumonia and broncho-pneumonia	76.1	87.6	73.5	79.8
Other diseases of respiratory system	19.2	15.0	19.6	15.0
Diarrhea and enteritis, under 2 years	76.1	36.3	22.0	10.3
Diarrhea and enteritis, 2 years and over	11.7	6.4	13.1	14.1
Other diseases of digestive system	45.8	62.0	66.9	54.4
Bright's disease and nephritis	58.7	32.1	75.9	84.4
Childbirth	13.8	12.8	7.4	7.5
Diseases of early infancy	37.0	59.8	57.1	32.8
Suicide	24.7	40.6	24.5	20.6
Other violence	100.8	175.2	93.1	88.2
All other causes	38.5	38.5	32.7	40.3

Selected Counties (Reporting 300 Deaths) Arranged Geographically: 1915 and 1914.
cluded.

California				Southern California				
counties				Other counties				
Solano	Stanislaus	Tulare	Los Angeles	Orange	Riverside	San Bernardino	San Diego	Santa Barbara
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
9.3	22.3	6.7	4.0	12.9	12.8	2.6	5.2	13.0
	2.8	2.3	0.2		6.4		0.7	
3.1	11.1		2.7	3.2	4.3	0.9	0.7	7.8
		4.5	1.5			2.6		2.6
	2.8	2.3	2.2	1.6	4.3	6.1	0.7	2.6
6.2	2.8	9.0	6.9	9.7	2.1	2.6	10.3	2.6
	11.1	13.5	4.2	12.9	2.1	3.5	9.6	10.4
96.8	97.5	6.7	2.8	3.2	2.1	0.9	3.7	56.6
12.3	11.1	11.2	19.5	111.3	183.8	188.1	132.0	18.2
67.9	58.5	49.4	78.3	25.8	23.5	29.6	19.9	75.5
43.2	41.8	38.2	42.0	69.4	53.4	40.9	88.5	41.7
3.1	2.8	13.5	6.2	50.0	42.7	36.6	47.2	7.8
114.2	89.1	71.9	78.7	9.7	10.7	5.2	7.4	122.4
188.3	147.6	155.0	185.7	116.1	57.7	146.3	76.0	203.1
86.4	44.6	76.4	68.5	138.7	126.1	128.0	204.3	44.3
24.7	27.9	21.7	15.7	51.6	62.0	71.4	43.5	20.8
21.6	22.3	42.7	20.5	24.2	12.8	13.9	14.8	10.4
3.1	2.8	22.5	10.9	41.9	36.3	34.9	18.4	18.2
46.3	52.9	47.2	47.0	9.7	8.6	13.1	15.5	41.7
77.2	80.8	60.7	83.0	37.1	34.2	41.8	52.4	54.7
15.4	22.3	15.7	9.0	69.4	38.5	46.2	67.8	7.8
21.6	66.9	60.7	39.4	6.4	8.5	9.0	6.0	49.5
15.4	19.5	27.0	24.2	71.0	81.2	37.5	30.2	15.6
123.4	123.3	62.9	62.3	21.0	29.9	16.6	27.3	106.8
18.5	33.4	56.2	43.0	67.7	106.8	83.6	73.0	36.5
				35.5	49.2	37.5	44.3	
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
8.8	12.7	11.9	5.8	21.6	13.6	10.5	7.7	7.6
	3.2	4.8	0.5					
5.8	15.8		1.3		2.3	4.4		5.1
	9.5	21.5	0.9	6.6	2.3	3.5	1.5	
5.8	6.3	9.5	3.1	10.0	9.1	2.6	2.3	7.6
2.9	6.3	7.2	6.0	1.7	6.8	4.4	3.9	
	3.2	9.5	3.0	13.3	4.5	0.9	1.5	5.1
	3.2	7.2	3.5	6.6	9.1	2.6	1.5	5.1
76.0	82.3	107.4	151.9	91.7	262.3	196.4	115.4	93.7
8.8	6.3	23.9	22.3	33.2	27.3	21.1	23.9	22.8
58.5	60.1	54.9	77.8	66.4	47.7	78.0	85.4	60.8
46.8	34.8	45.3	40.3	56.5	51.5	36.0	49.2	32.9
11.7	9.5	9.5	8.7	24.9	22.7	6.2	8.5	15.2
111.1	113.9	95.5	81.9	101.3	68.2	152.8	82.3	116.4
187.1	110.7	124.1	165.5	104.7	115.9	125.6	180.0	146.8
73.1	75.9	81.1	60.2	71.4	54.5	63.2	51.5	45.6
20.5	34.8	14.3	21.1	18.3	20.5	14.9	13.9	27.8
26.3	12.7	57.3	23.5	51.8	47.7	41.3	22.3	40.5
14.6	9.5	14.3	9.3	13.3	11.4	12.3	7.7	15.2
43.9	75.9	38.2	50.0	53.2	43.2	27.2	18.5	86.1
67.3	66.5	54.9	73.6	69.8	56.8	35.1	81.5	59.6
8.8	12.7	7.2	8.6	6.6	15.9	10.5	6.9	10.1
49.7	69.6	38.2	41.4	43.2	47.7	36.0	32.3	43.0
29.2	15.8	16.7	21.5	16.6	20.5	15.8	21.6	27.8
117.0	88.6	93.1	69.8	68.1	68.2	86.0	96.9	86.1
26.3	57.0	52.5	48.5	3.2	27.3	30.7	50.8	48.1

TABLE 36.—Deaths from Certain Principal Causes, for Free

Cause of death	Free-holders' charter cities	Northern California				
		Eureka	Napa	Petaluma	Santa Rosa	Grass Valley
1915.						
All causes	23,821	228	116	90	157	67
Typhoid fever	156			2	1	
Malarial fever	9					
Smallpox	1					
Measles	67	3		1	1	
Scarlet fever	23					
Whooping-cough	67		2		2	
Diphtheria and croup	228			4		1
Influenza	73	1	1	2	2	1
Other epidemic diseases	65					1
Tuberculosis of lungs	2,756	15	7	8	9	10
Tuberculosis of other organs	550	8	1	1	2	2
Cancer	1,936	24	7	4	10	4
Other general diseases	1,049	13	5	4	6	4
Meningitis	154	2		1	1	
Other diseases of nervous system	1,785	19	15	7	14	7
Diseases of circulatory system	4,652	42	28	9	31	14
Pneumonia and broncho-pneumonia	1,863	18	2	8	20	9
Other diseases of respiratory system	427	2	5	2	3	
Diarrhea and enteritis, under 2 years	403	4		1	1	
Diarrhea and enteritis, 2 years and over	231	5	2	4	3	
Other diseases of digestive system	1,308	10	5	11	16	3
Bright's disease and nephritis	1,688	13	11	2	8	2
Childbirth	229	1			1	
Diseases of early infancy	833	8	3	3	9	3
Suicide	682	7	6	2	2	
Other violence	1,639	25	10	6	10	3
All other causes	922	8	6	8	5	3
1914.						
All causes	22,525	223	84	80	129	73
Typhoid fever	198	2	1		1	
Malarial fever	20				1	
Smallpox	1					
Measles	103	5				
Scarlet fever	29					
Whooping-cough	165	3	1			
Diphtheria and croup	177			1	1	3
Influenza	58	1				
Other epidemic diseases	77	1			1	
Tuberculosis of lungs	2,566	15	4	5	4	8
Tuberculosis of other organs	510	4		4	1	1
Cancer	1,814	30	5	12	15	8
Other general diseases	981	8	5	4	8	5
Meningitis	135	1	2	1		
Other diseases of nervous	1,788	13	15	6	16	5
Diseases of circulatory system	4,085	38	17	9	25	17
Pneumonia and broncho-pneumonia	1,616	13	8	11	12	2
Other diseases of respiratory system	476	5	2	1	2	1
Diarrhea and enteritis, under 2 years	452	4			3	2
Diarrhea and enteritis, 2 years and over	206	1	1	1		2
Other diseases of digestive system	1,264	11	4	3	13	4
Bright's disease and nephritis	1,588	10	5	4	7	4
Childbirth	208	1	1	1	2	1
Diseases of early infancy	801	11		6	7	5
Suicide	616	8	3	2	2	
Other violence	1,555	26	5	3	5	2
All other causes	896	12	5	6	3	3

holders' Charter Cities, Arranged Geographically, 1915 and 1914.

Central California										
San Francisco	Alameda	Berkeley	Oakland	Richmond	San Rafael	Monterey	Salinas	San Luis Obispo	Palo Alto	San Jose
7,259	299	498	2,169	160	92	73	55	119	80	468
41	6	4	13	3	1		1	1		2
2										
17	1	3	6				1			4
7		1	1							1
20			13	2			1			3
114		1	19	1		2				4
9		1	2				1			3
19		2	7	1						
784	28	29	203	18	6	3	2	12	1	41
170	10	11	57	1	3	1	5	2		11
586	26	63	201	7	14	7	7	6	6	40
312	9	22	97	6	5	5	1	4	3	17
43		1	15	1	1		1		1	1
452	25	43	171	10	8	5	4	10	1	40
1,536	74	123	478	25	16	16	6	40	7	110
644	21	39	195	15	10	4	5	12	3	37
144	7	7	38	2	3		1	3	2	11
96	1	3	43	5	2	1	1	1		6
44	6	4	18		1	2	1			6
421	18	23	107	6	7	5	4	8	1	27
500	20	29	139	11	1	3	1	4	3	40
56	7	7	21	3	3		3			5
219	8	23	69	13	1	6	3	1	1	12
271	10	6	49	4	3	2		3		6
495	16	26	136	28	5	9	3	5	1	21
257	6	17	71	3	2	2	3	7		15
6,940	290	435	2,115	142	80	62	58	101	23	461
57	2	4	13	3			1	2		3
5	1		1					1		1
42		3	24	1						2
4			4							2
56	5	9	30	4	1	5		1		7
86	1	7	25	2						
10		1	5		1					3
23			3	3			2			1
778	23	19	177	10	9	6	6	9		40
169	3	6	45	2	1	3	1	2		10
572	19	46	166	6	7	4	4	9	4	43
237	17	25	95	7	3	3	5	4		20
55	4	5	15	2			3			2
419	27	43	191	6	8	6	1	5	4	47
1,409	61	96	425	16	20	10	5	25	12	96
509	23	36	163	17	8	5	5	7		31
161	10	9	39	2		3	2	2	1	8
94	1	7	32	1	1	1	3	5		8
43	2	3	18	1				3	1	4
404	17	19	107	6	4	3	5	5	1	32
472	26	28	153	6	4	5	2	3	2	40
56	6	4	29	2		1		4	1	4
235	6	25	79	10	3	3	1	4	2	20
233	8	6	67	4	3	1	4			9
476	14	20	115	25	4	1	6	5		20
225	14	14	89	6	3	2	2	5		8

TABLE 36.—Deaths from Certain Principal Causes, for Freeholders'

Cause of death	Central California						
	Santa Cruz	Watsonville	Fresno	Bakersfield	Sacramento	Stockton	Vallejo
1915.							
All causes	190	76	377	286	997	725	122
Typhoid fever	1		2	2	19	6	1
Malarial fever				2			
Smallpox							
Measles					1	1	1
Scarlet fever						1	
Whooping-cough			1				
Diphtheria and croup	2		2	8	6	3	2
Influenza	3	2	3		5		
Other epidemic diseases	1		1		2	5	
Tuberculosis of lungs	14	10	53	53	116	79	13
Tuberculosis of other organs	2	2	11	6	23	14	2
Cancer	13	5	22	21	73	43	9
Other general diseases	9	2	8	9	48	31	7
Meningitis			3	4	6	11	1
Other diseases of nervous system	23	6	17	9	52	126	10
Diseases of circulatory system	63	9	61	34	169	85	21
Pneumonia and broncho-pneumonia	8	3	33	25	80	77	18
Other diseases of respiratory system	3	4	4	6	16	18	2
Diarrhea and enteritis, under 2 years	4	2	18	7	23	6	1
Diarrhea and enteritis, 2 years and over			5		14	17	
Other diseases of digestive system	8	7	21	14	56	28	7
Bright's disease and nephritis	10	9	23	20	68	45	8
Childbirth		1	4	5	12	4	2
Diseases of early infancy	3	4	21	10	40	18	4
Suicide	4	5	11	6	33	25	
Other violence	11	2	39	36	91	46	11
All other causes	8	3	11	9	39	36	2
1914.							
All causes	181	81	430	*	1,006	564	159
Typhoid fever		1	5		23	12	
Malarial fever			2		4		
Smallpox							
Measles			2		7		2
Scarlet fever			11		2		
Whooping-cough	1		4		10		
Diphtheria and croup			5		5		1
Influenza	2		8		4	1	
Other epidemic diseases	1	1	3		5	2	
Tuberculosis of lungs	8	5	35		131	61	10
Tuberculosis of other organs	2	2	7		20	9	1
Cancer	21	7	27		65	31	11
Other general diseases	6	5	13		59	22	9
Meningitis	2		5		5	6	
Other diseases of nervous system	20	2	23		74	116	22
Diseases of circulatory system	49	12	49		155	72	25
Pneumonia and broncho-pneumonia	11	7	37		80	53	17
Other diseases of respiratory system	3	6	13		19	13	2
Diarrhea and enteritis, under 2 years	1	2	31		23	9	2
Diarrhea and enteritis, 2 years and over	2		7		13	13	5
Other diseases of digestive system	11	6	27		74	25	9
Bright's disease and nephritis	7	10	24		83	37	11
Childbirth	3		4		8	2	
Diseases of early infancy	5	6	16		62	12	7
Suicide	2		11		23	15	6
Other violence	16	7	46		78	27	17
All other causes	7	2	15		34	23	2

*Not organized as freeholders' charter city until 1915.

Charter Cities, Arranged Geographically: 1915 and 1914—Concluded.

Southern California										
Modesto	Los Angeles	Alhambra	Long Beach	Pasadena	Pomona	Santa Monica	Riverside	San Bernardino	San Diego	Santa Barbara
145	5,853	87	431	496	160	187	217	358	1,008	232
3	26		1		2	2	4	1	6	5
	1	1					2		1	
3	15		3			1	1	1		3
	9	3								
	15	1					2	4	1	
	38		1	5			1	1	12	1
2	18		1	3	2	3		2	8	3
	18		2	1		1				
13	872	6	20	59	12	12	25	80	128	20
1	138	1	4	8	3	1	5	12	22	5
12	456	11	37	55	17	18	11	16	86	19
8	264	2	28	24	6	3	11	15	54	7
1	43		2	1			3	1	8	2
13	417	14	38	51	12	22	14	27	73	30
21	1,020	17	92	101	32	45	35	40	204	43
9	425	4	21	28	16	11	11	25	44	13
3	87	1	11	6	5	5	4	7	13	2
3	111	1	10	3	3		4	18	22	2
1	54	1	3	10	4	2	2	3	12	7
11	299	3	23	30	11	14	11	17	56	12
14	453	5	62	42	12	12	10	14	77	17
4	66		3	6	1		3	3	5	3
6	234	5	10	14	5	5	16	15	27	14
2	164	1	7	6	2	3	1	7	30	4
10	362	8	37	16	16	17	26	34	63	15
5	253	2	15	27	8	9	15	15	47	5
100	5,644	*	422	458	144	189	219	352	946	260
2	33		3	3		2	5	9	10	1
1	3									
1										
1	6				2		1	4		1
	5								1	
1	12		4	1	4	1	1		2	2
1	32					2		1	4	
	12		2	2		1	1		2	2
	24		1	2	1		2		1	
11	841		23	60	16	10	32	82	101	24
1	149		8	6	3	5	8	9	26	7
4	438		41	53	11	9	15	25	86	20
5	220		32	17	5	7	16	11	47	11
1	54		3	3		1	3	1	9	2
11	442		45	43	16	20	18	19	74	31
9	889		98	86	31	45	27	43	176	43
9	334		23	25	10	3	10	25	43	14
2	111		8	14	1	2	4	9	16	5
2	141		7	8	4	4	10	15	23	8
	53		6	5	2	1	3	4	7	4
11	308		20	23	11	12	11	10	48	20
10	417		51	29	9	18	14	10	69	18
1	46		4	9		4	3	4	4	3
5	250		12	16	6	15	7	13	33	9
2	150		7	3	2	3	7	4	23	8
13	408		19	32	2	16	12	40	86	14
5	276		15	13	8	8	9	14	55	13

TABLE 37.—Proportion per 1,000 Total Deaths from Certain Principal Causes, for 1915 and 1916 and

Cause of death	Free- holders' charter cities	North- ern Cal- ifornia	Central				
		Eureka	San Fran- cisco	Alameda	Berkeley	Oakland	San Jose
1915.							
All causes	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	6.5		5.7	20.1	8.1	6.0	4.3
Malarial fever	0.4		0.3				
Smallpox	*						
Measles	2.8	13.2	2.3	3.3	6.1	2.8	8.6
Scarlet fever	1.0		1.0		2.0	0.5	2.2
Whooping-cough	2.8		2.8			6.0	6.5
Diphtheria and croup	9.6		15.7		2.0	8.8	8.6
Influenza	3.1	4.4	1.2		2.0	0.9	6.5
Other epidemic diseases	2.7		2.6		4.1	3.2	
Tuberculosis of lungs	115.7	65.8	108.0	98.7	58.8	93.6	88.5
Tuberculosis of other organs	23.1	35.1	23.4	33.4	22.3	26.3	23.8
Cancer	81.3	105.3	80.7	87.0	127.8	92.7	86.4
Other general diseases	44.0	57.0	48.0	30.1	44.6	44.7	36.7
Meningitis	6.5	8.8	5.9		2.0	6.9	2.2
Other diseases of nervous system	74.9	83.3	62.3	83.6	87.2	78.8	86.4
Diseases of circulatory system	196.3	184.2	211.6	247.5	259.6	230.4	237.6
Pneumonia and broncho-pneumonia	79.5	78.9	88.7	70.2	79.1	89.9	79.9
Other diseases of respiratory system	17.9	8.8	19.8	23.4	14.2	17.5	23.7
Diarrhea and enteritis, under 2 years	16.9	17.5	13.2	3.3	6.1	19.8	13.0
Diarrhea and enteritis, 2 years and over	9.7	21.9	6.1	20.1	8.1	8.3	13.0
Other diseases of digestive system	51.7	43.9	58.0	60.2	46.7	49.3	58.3
Bright's disease and nephritis	70.9	57.0	68.9	66.9	58.8	64.1	86.4
Childbirth	9.6	4.4	7.7	23.4	14.2	9.7	10.8
Diseases of early infancy	35.0	35.1	30.2	26.8	46.7	31.8	25.9
Suicide	28.6	30.7	37.3	33.4	12.2	22.6	13.0
Other violence	68.8	109.6	68.2	53.5	52.8	62.7	45.3
All other causes	38.7	35.1	35.4	20.1	34.5	32.7	32.4
1914.							
All causes	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	8.8	9.0	8.2	6.9	9.2	6.1	6.5
Malarial fever	0.9		0.7	3.5		0.5	2.2
Smallpox	*						
Measles	4.6	22.4	6.1		6.9	11.4	4.3
Scarlet fever	1.3		0.6			1.9	4.3
Whooping-cough	7.3	13.5	8.1	17.2	20.7	14.2	15.2
Diphtheria and croup	7.9		12.4	3.5	16.1	11.8	
Influenza	2.6	4.5	1.4		2.3	2.4	6.5
Other epidemic diseases	3.4	4.5	3.3			1.4	2.2
Tuberculosis of lungs	113.9	67.3	112.1	79.3	43.7	83.7	83.8
Tuberculosis of other organs	22.6	17.9	21.3	10.3	13.8	21.3	21.7
Cancer	80.5	134.5	82.4	65.5	105.7	78.5	93.3
Other general diseases	43.6	35.9	41.4	58.6	57.5	44.9	43.4
Meningitis	8.2	4.5	7.9	13.8	11.5	7.1	4.3
Other diseases of nervous system	79.4	58.3	60.4	93.1	98.8	90.3	101.9
Diseases of circulatory system	181.3	170.4	203.0	210.3	220.7	200.9	208.2
Pneumonia and broncho-pneumonia	71.7	58.3	82.0	79.3	82.7	79.4	67.2
Other disease of respiratory system	21.1	22.4	23.2	34.5	20.7	18.4	17.4
Diarrhea and enteritis, under 2 years	20.1	17.9	13.5	3.4	16.1	15.1	17.4
Diarrhea and enteritis, 2 years and over	9.2	4.5	6.2	6.9	6.9	8.5	8.7
Other diseases of digestive system	56.1	49.3	58.2	58.6	43.7	50.6	86.6
Bright's disease and nephritis	70.5	44.8	68.0	89.7	64.3	72.3	8.7
Childbirth	9.2	4.5	8.1	20.7	9.2	13.7	43.4
Diseases of early infancy	39.6	49.3	33.9	20.7	57.5	37.4	19.5
Suicide	27.4	35.9	33.6	27.6	13.8	31.7	43.4
Other violence	69.0	116.6	68.6	48.3	46.0	54.4	17.3
All other causes	39.8	53.8	32.4	48.3	32.2	42.1	

*Less than one-tenth of 1 per thousand.

†Not organized as freeholders' charter city until 1915.

Selected Freeholders' Charter Cities (Reporting 200 Deaths) Arranged Geographically: 1914.

California				Southern California						
Fresno	Bakersfield	Sacramento	Stockton	Los Angeles	Long Beach	Pasadena	Riverside	San Bernardino	San Diego	Santa Barbara
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
5.3	7.0	19.1	8.3	4.4	2.3	-----	18.4	2.8	6.0	21.6
-----	7.0	-----	-----	0.2	-----	-----	9.2	-----	1.0	-----
-----	-----	1.0	1.4	2.6	7.0	-----	4.6	2.8	-----	12.9
-----	-----	-----	1.4	1.5	-----	-----	-----	-----	-----	-----
2.6	-----	-----	-----	2.6	-----	-----	9.2	11.2	1.0	-----
5.3	28.0	6.0	4.1	6.5	2.3	10.1	4.6	2.8	12.0	4.3
8.0	-----	5.0	-----	2.2	2.3	6.1	-----	5.6	8.0	12.9
2.6	-----	2.0	6.9	8.1	4.6	2.0	-----	-----	4.0	-----
140.6	185.3	116.3	109.0	149.0	46.4	118.9	115.2	223.5	127.6	83.2
29.2	21.0	28.1	19.3	23.6	9.3	16.1	23.1	33.5	21.9	21.6
58.4	73.4	73.2	59.3	77.9	85.9	110.9	50.7	44.7	85.7	81.9
21.2	31.5	48.2	42.8	45.1	65.0	48.4	50.7	41.9	53.8	30.2
8.0	14.0	6.0	15.2	7.3	4.6	2.0	13.8	2.8	8.0	8.6
45.1	31.5	52.2	173.8	71.2	88.2	102.8	64.5	75.4	72.8	129.3
161.8	118.9	169.5	117.2	174.3	213.5	203.6	161.3	111.7	203.4	185.3
87.5	87.4	80.2	108.2	72.6	48.7	56.5	50.7	69.8	43.9	58.0
10.6	21.0	16.1	24.8	14.9	25.5	12.1	18.4	19.5	12.9	8.6
47.7	24.5	23.1	8.3	19.0	23.2	6.0	18.4	50.3	21.9	8.6
13.3	-----	14.0	23.4	9.2	7.0	20.2	9.2	8.4	12.0	30.2
63.7	43.9	56.2	33.6	51.1	53.4	60.5	50.7	47.5	55.8	51.7
61.0	69.9	68.2	62.1	77.4	143.8	84.7	46.1	39.1	76.8	73.3
10.6	17.5	12.0	5.5	11.3	7.0	12.1	13.8	8.4	5.0	12.9
55.7	34.9	40.1	24.8	40.0	23.2	28.2	73.8	41.9	26.9	60.4
29.2	21.0	33.1	34.5	28.0	16.2	12.1	4.6	19.5	29.9	17.2
103.4	125.9	91.3	63.4	61.8	85.8	32.3	119.8	96.0	62.8	64.7
29.2	31.4	39.1	49.7	43.2	34.8	54.4	69.2	41.9	46.9	21.6
1,000.0	†	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
11.6	-----	21.6	21.3	5.8	7.1	6.6	22.8	25.6	10.6	3.9
4.6	-----	3.7	-----	0.5	-----	-----	-----	-----	-----	-----
4.6	-----	6.6	-----	1.1	-----	-----	4.6	11.4	-----	3.9
25.6	-----	1.9	-----	0.9	-----	-----	-----	-----	1.1	-----
9.3	-----	9.4	-----	2.1	9.5	2.2	4.6	-----	2.1	7.7
11.6	-----	4.7	-----	5.7	-----	-----	-----	2.8	4.2	-----
18.6	-----	3.7	1.8	2.1	4.7	4.4	4.6	-----	2.1	7.7
7.0	-----	4.7	3.5	4.2	2.4	4.4	9.1	-----	1.1	-----
81.4	122.9	113.5	149.0	54.5	131.0	146.1	232.9	106.8	92.3	92.3
16.3	18.8	16.0	26.4	7.1	13.1	36.5	25.6	27.5	26.9	26.9
62.8	61.0	56.0	77.6	97.2	115.7	68.5	71.0	90.9	76.9	76.9
30.2	55.3	39.0	39.0	75.8	37.1	73.0	31.3	49.7	42.3	42.3
11.6	4.7	10.6	9.6	7.1	6.5	13.7	2.8	9.5	7.7	7.7
53.5	69.4	206.7	78.3	106.6	93.9	82.2	54.0	78.2	119.2	119.2
114.0	145.4	127.6	167.5	220.4	187.8	123.3	122.1	186.1	165.4	165.4
96.1	75.0	94.0	59.2	54.5	54.6	45.7	71.0	45.5	53.9	53.9
30.2	17.8	23.0	19.7	19.0	30.6	18.3	25.6	16.9	19.2	19.2
72.1	21.6	16.0	25.0	16.6	17.5	45.7	42.6	24.3	30.8	30.8
16.3	12.2	23.0	9.4	14.2	10.9	13.7	11.4	7.4	15.4	15.4
62.8	69.4	44.3	53.7	47.4	61.1	50.2	28.4	50.7	76.9	76.9
55.8	77.8	65.6	73.9	120.8	63.3	63.9	28.4	72.9	69.2	69.2
9.3	7.5	3.5	8.1	9.5	19.6	13.7	11.4	4.2	11.5	11.5
37.2	58.2	21.3	44.3	28.4	34.9	32.0	36.9	34.9	34.6	34.6
25.6	21.6	26.6	26.6	16.6	6.5	31.9	11.4	24.3	30.8	30.8
107.0	73.2	47.9	71.4	45.0	69.9	54.8	113.6	90.9	53.8	53.8
34.9	31.9	40.8	48.9	35.0	28.4	41.1	39.8	58.1	50.0	50.0

TABLE 38.—Deaths of Males and Females 15 Years and Over.

Occupation (Showing annually at least 50 deaths)	Deaths: 1915								
	All causes	Typhoid fever	Other epidemic diseases	Tuberculosis	Cancer	Nervous system	Circulatory system	Respiratory system	Digestive system
15 years and over	32,857	233	322	5,086	2,756	3,100	7,145	2,563	2,077
Males	20,314	167	177	3,384	1,280	1,822	4,306	1,747	1,222
All occupations	17,600	149	155	3,084	1,101	1,530	3,676	1,517	1,063
Professional	1,183	6	9	197	75	114	250	91	66
Architects, artists and teachers of art	68	1		19	3	7	16	3	4
Clergymen	153	1	3	11	11	19	38	19	6
Engineers and surveyors	220	1	1	63	13	13	43	17	8
Journalists	58			12	2	7	10	8	6
Lawyers	174	2	3	16	13	20	46	9	14
Musicians and teachers of music	73			16	3	5	18	5	4
Physicians and surgeons	192		1	19	15	17	54	17	10
Others of this class	195	1	1	41	15	26	34	13	14
Clerical and official	1,413	14	11	281	76	149	315	114	85
Bookkeepers, clerks and copyists	758	12	4	200	32	74	147	62	34
Bankers, brokers and officials of companies	242		1	22	25	33	72	15	18
Collectors, auctioneers and agents	311	2	6	42	18	31	74	27	21
Others of this class	102			17	1	11	22	10	12
Mercantile and trading	1,190	7	9	175	81	110	297	90	80
Commercial travelers	68		1	19	5	8	10	7	3
Merchants and dealers	840	7	4	86	64	85	226	65	52
Hucksters and peddlers	68		2	9	4	1	19	7	4
Others of this class	214		2	56	8	16	42	11	21
Public entertainment	409	2	3	71	23	28	81	37	33
Hotel and boarding-house keepers	106		1	12	11	10	25	6	6
Saloon keepers, liquor dealers, bartenders and restaurant keepers	303	2	2	59	12	18	56	31	27
Personal service, police and military	522	3	2	99	29	51	89	32	41
Barbers and hairdressers	115	1	1	36	5	14	14	3	11
Policemen, watchmen and detectives	136	1	1	9	8	17	31	6	8
Soldiers, sailors and marines (U. S.)	145	1		15	7	12	25	14	11
Others of this class	126			39	9	8	19	9	11
Laboring and servant	3,752	45	20	885	186	251	506	332	212
Laborers (not agricultural)	3,228	43	18	738	166	222	508	280	180
Servants	524	2	2	147	20	29	98	52	32
Manufacturing and mechanical industry	3,657	26	26	570	238	341	637	326	216
Bakers	121	1	2	27	2	9	25	10	7
Blacksmiths	167			21	16	11	31	14	13
Boot and shoe makers	102			19	4	7	19	15	8
Butchers	106	1	1	9	9	13	22	15	6
Cabinet makers and upholsterers	74		1	13	2	3	16	9	6
Carpenters	650	4	5	71	49	64	187	53	31
Cigar makers and tobacco workers	67			14	4	5	9	5	7
Clock and watch repairers, jewelers	69		1	5	3	16	16	3	5
Compositors, printers and pressmen	98	1	1	17	6	12	17	7	6
Engineers and firemen (not locomotive)	235	1		41	14	22	54	18	12
Iron and steel workers	155	1		38	11	13	21	11	8
Leather workers	52			7	1	4	19	7	4
Machinists	204	3		83	12	13	38	21	18
Masons (brick and stone)	84	1	2	18	7	5	23	5	1
Painters, glaziers and varnishers	284			47	16	40	53	20	13
Plumbers and gas and steam fitters	83	3	1	19	10	5	13	5	5
Tailors	125			29	4	15	29	11	4
Others of this class	161	7	12	142	68	84	235	97	62

Classified by Occupation, with Per Cents, for California: 1915.

Per cent															
Bright's disease and nephritis.	Suicide	Other violence.	Bright's disease and nephritis.	Digestive system.	Respiratory system.	Circulatory system.	Nervous system.	Cancer.	Tuberculosis.	Other epidemic diseases.	Typhoid fever.	All other causes.	Other violence.	Suicide.	Bright's disease and nephritis.
2 616	1,085	2,368	2,996	0.7	1.0	15.3	8.4	9.6	21.7	8.7	6.2	8.0	3.2	8.1	9.1
1,672	868	2,196	1,482	0.8	0.9	16.6	6.2	8.9	21.5	8.6	6.0	8.2	4.2	10.8	7.3
1,458	726	1,912	1,269	0.8	0.9	17.2	6.3	8.7	20.9	8.6	6.0	8.3	4.2	10.9	7.2
113	30	76	97	0.5	0.8	17.4	6.6	10.1	22.9	8.0	5.8	10.0	2.6	6.7	8.6
5	2	4	4	1.5	-----	27.9	4.4	10.3	23.5	4.4	5.9	7.4	2.9	5.9	5.9
17	1	5	22	0.7	2.0	7.2	12.4	24.8	12.4	3.9	11.1	0.6	3.3	14.4	-----
10	6	26	19	0.5	0.5	28.6	5.9	5.9	19.6	7.7	3.6	4.6	2.7	11.8	8.6
8	1	1	3	-----	-----	20.7	3.5	12.1	17.2	13.8	10.3	13.8	1.7	1.7	5.2
28	3	7	13	1.2	1.7	9.2	7.5	11.5	26.4	5.2	8.0	16.1	1.7	4.0	7.5
10	1	5	6	-----	-----	21.9	4.1	6.9	24.7	6.8	5.5	13.7	1.4	6.8	8.2
17	9	16	17	-----	0.5	9.9	7.8	8.9	28.1	8.9	5.2	8.9	4.7	8.3	8.8
18	7	12	13	0.5	0.5	21.0	7.7	13.3	17.4	6.7	7.2	9.2	3.6	6.2	6.7
107	68	98	100	1.0	0.8	19.9	5.4	10.5	22.3	8.0	6.0	7.6	4.8	6.6	7.1
48	38	48	59	1.6	0.5	26.4	4.2	9.8	19.4	8.2	4.5	6.3	5.0	6.3	7.8
17	9	14	16	-----	0.4	9.1	10.3	13.6	29.8	6.2	7.5	7.0	3.7	5.8	6.6
33	18	22	17	0.6	1.9	13.5	5.8	10.0	23.8	8.7	6.7	10.6	5.8	7.1	5.5
9	3	9	8	-----	-----	16.7	1.0	10.8	21.6	9.8	11.8	8.8	2.9	8.8	7.8
111	50	95	85	0.6	0.8	14.7	6.8	9.2	25.0	7.6	6.7	9.3	4.2	8.0	7.1
8	2	1	4	-----	1.5	27.9	7.4	11.8	14.7	10.3	4.4	11.8	2.9	1.4	5.9
87	27	66	66	0.8	0.5	10.6	7.6	10.1	26.9	7.7	6.2	10.4	3.4	7.9	7.9
3	4	12	3	-----	2.9	13.2	5.9	1.5	27.9	10.3	5.9	4.4	5.9	17.7	4.4
13	15	16	12	-----	0.9	27.1	3.7	7.5	19.6	5.2	9.8	6.1	7.0	7.5	5.6
39	25	33	34	0.5	0.7	17.4	5.6	6.8	19.8	9.1	8.1	9.5	6.1	8.1	8.3
9	5	12	9	-----	0.9	11.3	10.4	9.4	23.6	5.7	5.7	8.5	4.7	11.3	8.5
30	20	21	25	0.7	0.7	19.5	4.0	5.9	18.5	10.2	8.9	9.9	6.6	6.9	8.2
48	36	62	30	0.6	0.4	19.0	5.6	9.8	17.0	6.1	7.8	9.2	6.9	11.9	5.7
6	10	8	6	0.9	0.9	31.3	4.3	12.2	12.2	2.6	9.6	5.2	8.7	6.9	5.2
17	10	21	7	0.7	0.7	6.6	5.9	12.5	22.8	4.4	5.9	12.5	7.4	15.4	5.2
10	13	25	12	0.7	-----	10.3	4.8	8.3	17.2	9.7	7.6	6.9	9.0	17.2	8.3
15	3	8	5	-----	-----	31.0	7.1	6.4	15.1	7.1	8.7	11.9	2.4	6.3	4.0
561	175	544	245	1.2	0.5	23.6	5.0	6.7	15.9	8.8	5.7	7.0	4.7	14.5	6.5
217	146	500	210	1.3	0.6	22.9	5.1	6.9	15.7	8.7	5.6	6.7	4.5	15.5	6.5
44	29	44	35	0.4	0.4	28.1	3.8	5.5	16.8	9.9	6.1	8.4	5.5	8.4	6.7
316	174	333	254	0.7	0.7	15.6	6.5	9.3	22.9	8.9	5.9	8.6	4.8	9.1	7.0
7	9	16	6	0.8	1.7	22.3	1.7	7.4	20.7	8.3	5.8	5.8	7.4	13.2	4.9
17	9	18	17	-----	-----	12.5	9.6	6.6	18.5	8.4	7.8	10.2	5.4	10.8	10.2
14	3	8	5	-----	-----	18.6	3.9	6.9	18.6	14.7	7.9	13.7	2.9	7.9	4.9
8	5	7	7	3.8	0.9	8.5	8.5	12.3	20.8	14.1	5.7	7.5	4.7	6.6	6.6
11	3	4	6	-----	1.3	17.6	2.7	4.1	21.6	12.2	8.1	14.9	4.0	5.4	8.1
51	39	46	50	0.6	0.8	10.9	7.5	9.8	28.8	8.2	4.8	7.8	6.0	7.1	7.7
1	6	12	4	-----	-----	20.9	6.0	7.5	13.4	7.5	10.4	1.5	8.9	17.9	6.0
6	5	3	6	-----	1.5	7.2	4.4	23.2	23.2	4.4	7.2	8.7	7.2	4.3	8.7
11	6	4	10	1.0	1.0	17.4	6.1	12.2	17.4	7.2	6.1	11.2	6.1	4.1	10.2
18	11	32	12	0.4	-----	17.4	6.0	9.4	23.0	7.7	5.1	7.6	4.7	13.6	5.1
11	4	14	13	0.6	-----	34.5	7.1	8.4	20.0	7.1	5.2	7.1	2.6	9.0	8.4
3	1	1	5	-----	-----	13.5	1.9	7.7	36.5	13.5	7.7	5.8	1.9	1.9	9.6
18	7	27	14	1.5	-----	16.2	5.9	6.4	18.6	10.3	8.8	8.8	3.1	13.2	6.9
11	2	5	4	1.2	2.4	21.4	8.3	6.0	27.4	5.9	1.2	13.1	2.4	5.9	4.8
33	18	21	23	-----	-----	16.6	5.6	11.1	18.7	7.0	4.6	11.6	6.3	7.4	8.1
8	1	11	2	3.6	1.2	22.9	12.1	6.0	15.7	6.0	6.0	9.6	1.2	13.3	2.4
12	8	10	3	-----	-----	23.2	3.2	12.0	23.2	8.8	3.2	9.6	6.4	8.0	2.4
76	37	94	67	0.7	1.2	14.5	6.9	8.6	24.0	9.9	6.3	7.7	3.8	9.6	6.5

TABLE 38.—Deaths of Males and Females 15 Years and Over, Classified

Occupation (Showing annually at least 50 deaths)	Deaths: 1915								
	All causes.	Typhoid fever.	Other epidemic diseases.	Tuberculosis.	Cancer.	Diseases of—			
						Nervous system.	Circulatory system.	Respiratory system.	Digestive system.
Agriculture, transportation and other outdoor.....	5,447	46	75	740	391	479	1,187	487	327
Draymen, hackmen and teamsters.....	378	3	4	85	20	31	63	32	26
Farmers, planters and farm laborers.....	2,043	32	42	272	207	255	614	260	164
Gardeners, florists, nurserymen and vine growers.....	269		1	32	26	25	71	19	14
Lumbermen and raftsmen.....	134		1	11	9	10	26	7	9
Miners and quarrymen.....	704	8	8	140	49	36	140	73	34
Sailors, pilots and oystermen.....	276	3	3	40	21	26	64	19	15
Steam railroad employees.....	394	2	1	64	21	32	69	26	17
Stock raisers, herders and drovers.....	362	3	13	38	25	35	87	23	23
Others of this class.....	287		2	58	13	29	53	26	25
All other occupations.....	77			16	2	7	15	8	3
No occupation.....	2,794	18	22	350	150	292	719	230	159
Females.....	12,463	66	145	1,652	1,496	1,338	2,750	1,116	805
All occupations.....	1,178	12	13	218	116	106	222	98	72
Teachers in schools.....	133	1	2	23	16	11	21	12	8
Bookkeepers, clerks and copyists.....	61			16	2	3	8	6	9
Nurses and midwives.....	113	4	2	18	13	10	18	7	10
Servants.....	202	1	3	43	25	22	69	31	16
Dressmakers and seamstresses.....	84			14	9	6	19	8	3
All other occupations.....	495	6	6	104	51	54	87	34	26
No occupation.....	11,285	54	132	1,434	1,380	1,232	2,528	1,018	733

by Occupation, with Per Cents, for California: 1915—Concluded.

Per cent															
Bright's disease and nephritis.	Suicide	Other violence.	All other causes	Typhoid fever.	Other epidemic diseases.	Tuberculosis.	Cancer.	Diseases of—				Bright's disease and nephritis.	Suicide.	Other violence.	All other causes
								Nervous system.	Circulatory system.	Respiratory system.	Digestive system.				
458	173	662	422	0.8	1.4	13.6	7.2	8.8	21.8	8.9	6.0	8.4	3.2	12.2	7.7
19	20	58	17	0.8	1.0	22.5	5.3	8.2	16.7	8.5	6.9	5.0	5.3	15.3	4.5
246	72	245	234	1.2	1.6	10.3	7.8	9.7	23.2	9.8	6.2	9.3	2.7	9.3	8.9
27	11	25	18		0.4	11.9	9.7	9.3	26.4	7.0	5.2	10.0	4.1	9.3	6.7
9	7	33	12		0.8	8.2	6.7	7.5	19.4	5.2	6.7	6.7	5.2	24.6	9.0
55	23	93	50	0.4	1.1	19.9	7.0	5.1	19.9	10.4	4.8	7.8	3.3	13.2	7.1
6	9	43	17	1.1	1.1	14.5	7.6	9.4	23.2	6.9	5.4	5.8	3.3	15.6	6.1
33	9	93	27	0.5	0.8	16.2	5.3	8.1	17.5	6.6	4.3	8.4	2.3	23.6	6.9
35	11	35	32	0.8	3.6	10.5	6.9	9.7	24.0	6.9	6.4	9.7	3.0	9.7	8.8
18	11	37	15		0.7	20.2	4.5	10.1	18.5	9.1	8.7	6.3	3.8	12.9	5.2
5	5	14	2			20.7	2.6	9.1	19.5	10.4	3.9	6.5	6.5	18.2	2.6
214	132	286	213	0.7	0.8	12.5	5.7	10.5	25.7	8.2	5.7	7.7	4.7	10.2	7.6
914	167	470	1,514	0.5	1.2	13.3	12.0	10.7	22.1	8.9	6.5	7.6	1.3	3.8	12.1
79	34	82	126	1.0	1.1	18.5	9.9	9.0	18.8	8.3	6.1	6.7	2.9	7.0	10.7
14	4	7	14	0.8	1.5	17.3	12.0	8.3	15.8	9.0	6.0	10.5	3.0	5.3	10.5
4	3	5	5			26.2	3.3	4.9	13.1	9.8	14.8	6.6	4.9	8.2	8.2
7	6	4	14	3.5	1.8	15.9	11.5	8.9	15.9	6.2	8.9	6.2	5.3	3.5	12.4
17	8	24	33	0.4	1.0	14.7	8.6	7.5	23.6	10.6	5.5	5.8	2.8	8.2	11.3
6	4	5	10			16.7	10.7	7.1	22.6	9.5	3.6	7.1	4.8	6.0	11.9
31	9	37	50	1.2	1.2	21.0	10.3	10.9	17.6	6.9	5.2	6.3	1.8	7.5	10.1
865	133	388	1,388	0.5	1.2	12.7	12.2	10.9	22.4	9.0	6.5	7.7	1.2	3.4	12.3

TABLE 30.—Deaths of Males and Females, 15 Years and Over.

Occupation (Showing annually at least 50 deaths)	Deaths: 1914								
	All causes	Typhoid fever	Other febrile diseases	Tuberculosis	Cancer	Diseases of—			
						Nervous system	Circulatory system	Respiratory system	Negative system
15 years and over.....	30,864	311	310	4,813	2,672	3,231	6,309	2,367	1,977
Males	19,315	228	160	3,213	1,364	1,932	3,908	1,456	1,207
All occupations	16,673	208	145	2,908	1,110	1,635	3,283	1,236	1,069
Professional	966	8	14	165	66	116	209	56	56
Architects, artists and teachers of art.....	73	—	2	14	6	8	18	5	5
Clergymen	129	—	—	10	10	22	38	13	8
Engineers and surveyors.....	237	3	1	62	13	19	37	10	12
Lawyers	134	—	1	12	14	16	38	7	5
Musicians and teachers of music.....	65	—	1	17	5	8	7	3	4
Physicians and surgeons.....	158	—	4	19	10	23	34	8	11
Teachers (school)	54	—	1	5	3	7	16	2	1
Others of this class.....	116	5	4	26	5	13	21	8	10
Clerical and official.....	1,276	15	9	265	75	120	269	72	93
Bookkeepers, clerks and copyists.....	627	10	5	181	33	52	110	36	52
Bankers, brokers and officials of companies.....	204	2	3	19	14	21	66	12	11
Collectors, auctioneers and agents.....	334	2	1	51	21	36	71	16	26
Others of this class.....	111	1	—	14	7	11	22	8	7
Mercantile and trading.....	1,226	17	10	187	90	148	248	100	102
Merchants and dealers.....	805	8	5	79	63	102	177	59	68
Hucksters and peddlers.....	58	—	1	14	4	6	6	5	5
Others of this class.....	423	9	4	94	23	40	65	36	29
Public entertainment	392	3	1	70	21	34	82	29	29
Hotel and boarding-house keepers.....	118	1	—	10	10	10	33	7	8
Saloon keepers, liquor dealers, bartenders and restaurant keepers.....	274	2	1	60	14	24	49	22	21
Personal service, police and military.....	578	2	4	109	36	46	113	55	37
Barbers and hairdressers.....	120	1	1	32	4	12	19	10	8
Janitors and sextons.....	63	—	—	10	4	4	17	11	5
Policemen, watchmen and detectives.....	138	—	—	12	14	9	31	13	9
Soldiers, sailors and marines (U. S.).....	148	1	2	19	8	11	35	18	7
Others of this class.....	109	—	1	36	6	10	16	3	8
Laboring and servant.....	3,470	45	18	808	165	258	560	262	206
Laborers (not agricultural).....	2,996	43	14	609	144	224	470	237	178
Servants	475	2	4	131	21	34	90	25	30
Manufacturing and mechanical industry.....	3,402	44	29	601	252	361	678	233	203
Bakers	82	1	1	12	5	7	18	6	6
Blacksmiths	158	—	3	20	12	19	34	17	16
Boot and shoemakers.....	117	—	1	14	6	16	27	10	6
Butchers	83	3	1	13	13	5	20	5	6
Cabinet makers and upholsterers.....	56	—	1	10	3	6	14	2	2
Carpenters	631	7	8	80	59	70	125	40	32
Compositors, printers and pressmen.....	84	—	—	23	6	8	13	5	7
Engineers and firemen (not locomotive).....	224	7	—	41	16	15	38	17	17
Iron and steel workers.....	127	2	2	24	4	12	19	14	10
Machinists	211	3	2	36	14	29	40	11	10
Masons (brick and stone).....	90	1	1	12	7	11	23	4	8
Painters, glaziers and varnishers.....	283	5	—	68	19	34	45	15	11
Plumbers and gas and steam fitters.....	99	1	—	27	6	9	16	4	8
Tailors	136	1	3	38	10	15	29	8	9
Others of this class.....	1,018	13	6	174	72	105	215	75	55

Classified by Occupation, with Per Cents, for California: 1914.

Bright's disease and nephritis.	Suicide	Other violence	All other causes	Per cent											
				Typhoid fever.	Other epidemic diseases.	Tuberculosis.	Cancer.	Diseases of—				Bright's disease and nephritis.	Suicide	Other violence.	All other causes
								Nervous system.	Circulatory system.	Respiratory system.	Digestive system.				
2,382	912	2,065	2,915	1.0	1.0	15.6	8.7	10.5	20.4	7.7	6.4	7.7	3.0	8.6	9.4
1,493	771	2,204	1,485	1.2	0.8	16.6	6.6	10.0	20.2	7.5	6.3	7.7	4.0	11.4	7.7
1,258	649	1,906	1,251	1.2	0.9	17.4	6.7	9.8	19.7	7.4	6.4	7.5	3.9	11.6	7.5
97	20	75	84	0.8	1.5	17.1	6.8	12.0	21.6	5.8	5.8	10.0	2.1	7.8	8.7
7	1	5	2		2.7	19.2	8.2	11.0	24.7	6.9	6.8	9.6	1.4	6.8	2.7
12		3	13			7.7	7.7	17.1	29.5	10.1	6.2	9.3		2.3	10.1
24	7	36	13	1.3	0.4	26.2	5.5	8.0	15.6	4.2	5.1	10.1	2.9	15.2	5.5
17	2	4	18		0.7	9.0	10.5	11.9	28.4	5.2	3.7	12.7	1.5	3.0	13.4
8	4	5	3		1.5	26.2	7.7	12.3	10.8	4.6	6.2	12.3	6.1	7.7	4.6
17	1	8	23		2.5	12.0	6.3	14.6	21.5	5.1	7.0	10.8	0.6	5.1	14.5
3	2	8	6		1.8	9.3	5.6	13.0	29.6	3.7	1.8	5.6	3.7	14.8	11.1
9	3	6	6	4.3	3.4	22.4	4.3	11.2	18.1	6.9	8.6	7.8	2.6	5.2	5.2
98	57	88	112	1.2	0.7	20.8	5.9	9.4	21.1	5.6	7.5	7.7	4.4	6.9	8.8
40	20	41	47	1.6	0.8	28.9	5.3	8.3	17.5	5.7	8.3	6.4	3.2	6.5	7.5
21	4	10	21	1.0	1.5	9.3	6.9	10.3	32.3	5.9	5.4	10.3	1.9	4.9	10.3
28	25	27	30	0.6	0.3	15.2	6.3	10.8	21.2	4.8	7.8	8.4	7.5	8.1	9.0
9	8	10	14	0.9		12.6	6.3	9.9	19.9	7.2	6.3	8.1	7.2	9.0	12.6
121	46	102	115	1.3	0.8	14.5	7.0	11.5	19.3	7.8	7.9	9.4	3.6	7.9	9.0
81	24	45	94	1.0	0.6	9.8	7.8	12.7	22.0	7.3	8.4	10.1	3.0	5.6	11.7
6	1	9	1		1.7	24.1	6.9	10.4	10.4	8.6	8.6	10.4	1.7	15.5	1.7
31	21	48	20	2.1	0.9	22.2	5.4	9.5	15.4	8.5	6.9	8.0	5.0	11.4	4.7
24	28	33	35	0.8	0.3	17.9	6.1	8.7	20.9	7.4	7.4	6.1	7.1	8.4	8.9
14	6	12	7	0.8		8.5	8.5	8.5	28.0	5.9	6.8	11.8	5.1	10.2	5.9
10	22	21	28	0.7	0.4	21.9	5.1	8.8	17.9	8.0	7.7	3.6	8.0	7.7	10.2
30	31	70	31	0.3	0.7	18.9	6.2	8.0	20.4	9.5	6.4	6.7	5.4	12.1	5.4
12	5	6	10	0.9	0.8	26.7	3.3	10.0	15.8	8.3	6.7	10.0	4.2	5.0	8.3
2	4	6				15.9	6.4	6.3	27.0	17.5	7.9	3.2	6.3	9.5	
9	7	25	9			8.7	10.2	6.5	22.5	9.4	6.5	6.5	5.1	18.1	6.5
9	8	23	7	0.7	1.4	12.8	5.4	7.4	23.7	12.2	4.7	6.1	5.4	15.5	4.7
7	7	10	5		0.9	33.0	5.5	9.2	14.7	2.8	7.3	6.4	6.4	9.2	4.6
181	166	577	227	1.3	0.5	23.1	4.8	7.4	16.1	7.6	6.0	5.2	4.8	16.6	6.6
148	139	526	203	1.4	0.5	22.3	4.8	7.5	15.7	7.9	6.0	4.9	4.6	17.6	6.8
33	27	51	24	0.4	0.8	28.2	4.4	7.2	19.0	5.3	6.3	6.9	5.7	10.7	5.1
280	148	327	246	1.3	0.9	17.7	7.4	10.6	19.9	6.8	6.0	8.2	4.4	9.6	7.2
9	7	5	5	1.2	1.2	14.6	6.1	8.6	22.0	7.3	7.3	11.0	8.5	6.1	6.1
10	7	9	11		1.9	12.7	7.6	12.0	21.5	10.8	10.1	6.3	4.4	5.7	7.0
18	5	2	10		0.9	12.0	5.1	13.7	21.8	8.5	5.1	15.4	4.3	1.7	8.5
4	5	3	8	3.5	1.2	15.1	15.1	5.8	23.3	5.8	7.0	4.6	5.8	3.5	9.3
4	5	5	4		1.8	17.9	5.4	10.7	25.0	3.6	3.6	7.1	8.9	8.9	7.1
50	28	61	62	1.1	1.3	14.1	9.4	11.1	19.8	6.3	5.1	7.9	4.4	9.7	9.8
10	1	5	6			27.4	7.1	9.5	15.5	6.0	8.3	11.9	1.2	6.0	7.1
19	10	32	12	8.1		18.3	7.1	6.7	17.0	7.6	7.6	8.5	4.5	14.3	5.3
4	5	25	6	1.6	1.6	18.9	3.2	9.4	15.0	11.0	7.9	3.1	3.9	19.7	4.7
16	8	28	14	1.4	1.0	17.1	6.6	13.7	19.0	5.2	4.7	7.6	3.8	13.3	6.6
11	3	4	5	1.1	1.1	13.3	7.8	12.2	25.6	4.5	8.9	12.2	3.3	4.4	5.6
20	12	29	25	1.8		24.0	6.7	12.0	15.9	5.3	3.9	7.1	4.2	10.3	8.8
9	4	9	6	1.0		27.3	6.1	9.1	16.2	4.0	8.1	9.1	4.0	9.1	6.0
6	3	7	7	0.7	2.2	27.9	7.4	11.0	21.3	5.9	6.6	4.4	2.2	5.2	5.2
90	45	108	65	1.3	0.6	17.1	7.1	10.3	21.1	7.4	5.4	8.8	4.4	10.1	6.4

TABLE 39.—Deaths of Males and Females, 15 Years and Over, Classified

Occupation (Showing annually at least 50 deaths)	Deaths: 1914								
	All causes	Typhoid fever	Other epidemic diseases	Tuberculosis	Cancer	Diseases of—			
						Nervous system	Circulatory system	Respiratory system	Digestive system
Agricultural, transportation and other outdoor	5,178	67	60	677	391	534	1,100	421	329
Draymen, hackmen and teamsters	388	6	1	74	16	34	62	34	25
Farmers, planters and farm laborers	2,103	23	30	189	185	238	523	199	147
Gardeners, florists, nurserymen and vine growers	180	1	2	17	16	22	40	19	15
Livery stable keepers and hostlers	63			10	4	7	15	5	3
Lumbermen and raftsmen	131	1	1	16	10	14	15	9	5
Miners and quarrymen	712	2	10	138	52	64	144	51	34
Sailors, pilots and oystermen	259	6	2	37	20	29	44	20	11
Steam railroad employees	387	7	1	64	23	28	74	22	20
Stock raisers, herders and drovers	623	10	10	75	44	73	140	37	47
Others of this class	332	8	3	57	21	25	43	25	22
All other occupations	125	2		31	11	8	19	8	9
No occupation	2,642	25	15	305	154	307	619	220	138
Females	11,549	83	150	1,600	1,408	1,299	2,407	911	770
All occupations	1,186	6	12	229	103	119	234	95	79
Teachers in schools	104	1		20	14	15	16	11	6
Bookkeepers, clerks and copyists	70	1		28	5	5	5	2	9
Nurses and midwives	86	1	1	18	9	7	15	4	8
Servants	301	1	3	53	24	29	53	24	23
Dressmakers and seamstresses	85		1	14	8	16	16	7	3
All other occupations	540	2	7	96	43	47	129	47	30
No occupation	10,363	77	138	1,371	1,305	1,180	2,173	816	691

by Occupation, with Per Cents, for California: 1914—Concluded.

Per cent														
All other causes	Other violence	Suicide	Bright's disease and nephritis	Digestive system	Diseases of—			Cancer	Tuberculosis	Other epidemic diseases	Typhoid fever	All other causes	Other violence	Suicide
					Respiratory system	Circulatory system	Nervous system							
7.6	12.5	2.9	7.9	6.4	8.1	21.2	10.3	7.5	13.1	1.2	1.3	394	646	149
5.4	19.1	3.9	6.7	6.4	8.8	16.0	8.8	4.1	19.1	0.2	1.5	21	74	15
8.4	6.9	2.6	9.0	7.0	9.5	24.9	11.3	8.8	9.0	1.4	1.2	177	145	54
5.0	10.0	5.0	6.7	8.3	10.6	22.2	12.2	8.9	9.4	1.1	0.6	9	18	9
6.3	17.5	1.6	4.8	7.9	4.8	23.8	11.1	6.3	15.9	0.8	0.8	4	11	1
9.9	28.2	1.5	6.1	3.8	6.9	11.5	10.7	7.6	12.2	0.8	0.8	13	37	2
9.1	11.8	9.1	8.0	4.8	7.2	20.2	9.0	7.3	19.4	1.4	0.3	65	84	11
4.2	20.1	3.5	7.0	4.2	7.7	17.0	11.2	7.7	14.3	0.8	2.3	11	52	9
9.2	21.4	2.8	8.0	5.2	5.7	19.1	7.2	5.9	16.5	0.3	1.8	23	83	11
5.9	11.7	7.4	7.4	7.6	5.9	22.5	7.1	11.7	12.0	1.6	1.6	46	73	22
7.5	20.8	4.5	5.7	6.6	7.5	18.0	7.6	6.3	17.2	0.9	2.4	25	69	15
5.6	14.4	3.2	6.4	7.2	6.4	15.2	6.4	8.8	24.8	-----	1.6	7	18	4
8.9	10.1	4.6	8.9	5.2	8.3	23.4	11.6	5.8	11.6	0.6	1.0	234	268	122
12.4	4.0	1.2	7.7	6.7	7.9	20.8	11.2	12.2	13.9	1.3	0.7	1,430	461	141
9.4	7.6	1.9	7.2	6.7	8.0	19.7	10.0	8.7	19.3	1.0	0.5	111	90	22
9.6	4.8	1.0	4.8	5.8	10.6	15.4	14.4	13.4	19.2	1.0	1.0	10	5	1
8.6	7.1	-----	5.7	2.9	7.1	7.1	7.1	7.2	40.0	-----	1.4	6	5	-----
11.3	10.5	3.5	5.8	9.3	4.6	17.4	8.1	10.5	20.9	1.2	1.2	34	9	3
7.0	8.6	2.3	8.0	7.7	8.0	17.6	9.6	8.0	17.6	1.0	0.3	34	26	7
10.6	4.7	-----	8.2	8.3	3.5	18.8	18.8	9.4	16.5	1.2	1.2	9	4	-----
8.5	7.6	2.0	7.6	5.5	8.7	23.9	8.7	8.0	17.8	1.3	0.4	46	41	11
12.7	3.6	1.2	7.7	6.7	7.9	21.0	11.4	12.6	13.2	1.3	0.7	1,319	371	119

IV. STATISTICS OF MARRIAGES: 1915 AND 1914.

SYNOPSIS.

Number in Order. Of the 31,451 marriages in 1915 and the 31,902 in 1914, those which were the first for both parties numbered 21,993 and 22,747, respectively, the per cents being only 69.9 and 71.3, against the annual average of 72.8 for the ten-year period just ended. The per cent of weddings with both parties single decreased quite steadily from 74.1 in 1906 to merely 69.9 in 1915.

The proportion of first marriages is generally higher each year for San Francisco than for any other geographic division, though not as high as for certain small counties in the interior. The proportion of marriages where both parties were single is very low indeed, however, for Marin and San Mateo counties, adjoining San Francisco, as well as for Orange, adjoining Los Angeles.

In 1915 there were 3,878 marriages between bachelors and widows or divorcees, but only 2,617 between spinsters and widowers or divorced men, the corresponding figures for 1914 being 3,770 and 2,514. Only three counties in 1915 and eight in 1914 showed exceptions to the rule that there are more unions of bachelors with widows or divorcees than of spinsters with widowers or divorced men, the proportionate excess for the first named unions being now about one-half, against only one-third ten years ago.

In 2,963 cases in 1915, and 2,871 in 1914, the marriages were the second or over for both grooms and brides, the per cents for such marriages being as great as 9.4 and 9.0, against the average of 8.3 for the ten years last past, marked increases having appeared since 1906. Marriages where both parties were widowed or divorced occur much less often in the metropolis than in the suburbs, and somewhat less in the whole urban area than in sparsely settled rural counties.

Status of Grooms and Brides. In 1915 and 1914, respectively, the bachelor grooms numbered 25,871 and 26,517; the widowers 2,716 and 2,710; and the divorced men remarrying 2,864 and 2,675. The per cents for bachelors were 82.3 and 83.1, as compared with the annual average of 83.9 for 1906 to 1915, the proportion of bachelors among grooms having decreased generally through the ten years.

The spinster brides totaled 24,610 and 25,261 in 1915 and 1914; the widows 3,159 and 3,179; and the divorcees 3,682 and 3,462. The per cents for spinsters were 78.2 and 79.2, against the annual average of 80.7 for the ten-year period, the proportion for first marriage brides having dropped generally between 1906 and 1915.

While the proportions of widowers among grooms and of widows among brides varied only slightly through the ten years from the averages of 8.8 for widowers and 10.0 for widows, yet the per cents divorced, averaging 7.3 among grooms and 9.3 among brides, increased greatly between 1906 and 1915, rising from merely 6.1 to no less than 9.1 for grooms and from only 7.9 to as much as 11.7 for brides. For

the last nine years, in fact, the per cent of divorcees among brides increased steadily, thus: 7.4 (1907), 7.7, 8.4, 9.5, 9.6, 9.8, 10.3, 10.8 and 11.7 (1915).

The year 1915 is the first since the beginning of registration, in 1905, to show divorced men ahead of widowers in the number remarrying, the excess for 1915 being 148 (2,864 divorced men against 2,716 widowers). The divorcees remarrying surpassed the widows in each of the past four years, the excess for divorcees being 523 in 1915 and 283 in 1914, against only 58 in 1913 and merely 50 in 1912.

The widows outnumbered the widowers by 443, or 16.3 per cent, in 1915 and by 469, or 17.3 per cent, in 1914. Similarly, the divorcees outnumbered the divorced men by 818, or 28.6 per cent, in 1915 and by 787, or 29.4 per cent in 1914.

The per cents widowed among both grooms and brides, and divorced among grooms alone, were greater in both 1915 and 1914 for the countries south of Tehachapi than for those to the north.

Somewhat more widowers, as well as widows, remarry in the country districts than in urban centers, and, in the latter, many more remarry in the suburbs than in the metropolis proper.

Divorced men and women likewise remarry considerably more in the surrounding suburbs than within the main city.

The high marriage rates for suburban counties are due largely to the fact that these places are sought by city couples, especially by divorced persons marrying again.

The Widowed and Divorced. Although most weddings in California are of bachelors with spinsters, yet the greatest gains shown are for marriages of the widowed or divorced, especially the latter.

Statistics indicate that bachelors find divorcees very attractive indeed. While early years of registration showed more marriages of bachelors with widows than with divorcees, yet for six years beginning with 1910 there have been more unions of bachelors with divorcees than with widows. The per cent of total marriages which were between bachelors and divorcees rose steadily, thus: 4.6 (1907), 4.9, 5.2, 5.8, 5.9, 6.1, 6.2, 6.7 and 7.1 (1915).

In less degree than between bachelors and divorcees, there are also more weddings of spinsters with divorced men than with widowers. Unions between single women and divorced men surpassed those between spinsters and widowers for four years, beginning with 1912.

In contrast with bachelors and spinsters who wed the divorced more than the widowed, those who marry others of like prior experience when widowed or divorced themselves, seem more apt to unite with a mate widowed by death rather than with one divorced by law.

Nativity of California Brides. Of the 31,451 brides in 1915 and the 31,902 in 1914, the non-Caucasians numbered only 1,440 and 1,457, or 4.6 per cent of all each year.

Over nine-tenths of all Japanese weddings in California occur at San Francisco upon the arrival of ships with "picture brides." Nearly all the Japanese, Chinese and Indian brides were single, while the Negro brides included many widows and divorcees.

The white brides totaled 30,011 in 1915 and 30,445 in 1914, and among them the spinsters were 23,341 and 24,023; the widows 3,051 and 3,043; and the divorced 3,619 and 3,319.

The white brides were classified by nativity as follows: California, 10,809 and 11,073 in 1915 and 1914, respectively; other states, 13,628 and 13,183; and foreign born, 5,574 and 6,189.

The per cents for spinsters among all white brides were only 77.8 and 78.9 in 1915 and 1914 against the annual average of 80.6 for 1906 to 1915. On the other hand, the per cents for divorcees were no less than 12.0 and 11.1 as compared with the average of 9.4 for the last ten years. In fact, the per cent of divorcees among white brides increased steadily ever since 1907, thus: 7.4 (1907), 7.7, 8.4, 9.6, 9.7, 10.0, 10.5, 11.1 and 12.0 (1915).

For Californian, other American and foreign born white brides alike, the per cents single in 1915 and 1914 were notably below the average for 1906 to 1915; the per cents widowed substantially the same as the average; and the per cents divorced considerably above the average. Each class of brides also shows a general increase in the per cent divorced between 1906 and 1915, especially in the latest years.

The proportion of widows among all white brides was greater in 1915 and 1914 for southern California than for northern or central California, while the proportion of divorcees was somewhat less each year for the counties south of Tehachapi than for those to the north.

Widows remarry more in country districts than in urban centers, but divorcees remarry more in the metropolitan area than in the rural counties. However, both widows and divorcees remarry more in suburban counties, like Marin and San Mateo, than in San Francisco, the metropolis proper.

In substantially each element of the population—Californian, other American, or foreign—more divorcees, as well as widows, remarry in the suburban territory than within the metropolis itself.

The per cent distribution of white brides by nativity was as follows for 1915 and 1914: California, 36.0 and 36.4; other states, 45.4 and 43.3; and foreign, 18.6 and 20.3. The annual average per cents for 1906 to 1915 were: California, 38.8; other states, 41.7; and foreign, 19.5. Native Californians outnumbered other Americans in 1906 to 1909, but in the six years last past more of the white brides here were born in other states than within the Golden State.

Over half the white brides in both 1915 and 1914 were native daughters, in as many as thirty counties all north of Tehachapi. On the other hand, over half the brides both years were born in other states, in only eight counties in or near southern California, while at least one-fourth of the brides each year were foreign born, merely in San Francisco and one other county (Amador).

In 1915 and 1914, respectively, the per cents born in California among the single white brides were 39.0 and 39.3 against the average of 41.6 for 1906 to 1915; among divorcees were 30.8 and 29.7 against the average of 32.1; and among widows were only 19.3 and 20.7 against the average of 22.3. Throughout California the native daughters form a very large part of the spinster brides and a large proportion of the divorcees, but only a small proportion of the widows.

In 1915 and 1912 the per cents born elsewhere in the United States than here, among divorcees were 56.4 and 57.0 against the average of 54.8 for the ten years last past; among widows were 54.2 and 53.0

against the average of 51.5; and among spinsters were 42.6 and 40.1 against the average of 38.9. A larger proportion of the divorcees than of the widows remarrying in various parts of California were born elsewhere in the United States. Among first marriage brides there were more native Californians than other Americans in 1906 to 1912 but in the three years last past more spinster brides were natives of other states than of California.

The per cents foreign born in 1915 and 1914, respectively, among widowed brides were 26.5 and 26.3 as compared with the average for 1906 and 1915 of 26.2; among spinsters were 18.4 and 20.6 as compared with the average of 19.5; and among divorcees remarrying were only 12.8 and 13.3 as compared with the average of 13.1. Throughout California, as a rule, the proportion of foreign born brides is highest among the widowed, and next among the single, being very low indeed among the divorced.

While most of the spinster brides were born in California or other states, the great bulk of the divorcees were born elsewhere in the United States, and most of the widows were likewise born outside of California, either in other states or abroad. The proportion foreign born, though relatively great among widows, is especially small among divorcees, nearly all the divorced brides being natives of California or other states.

GENERAL MARRIAGE STATISTICS.

Number in Order.—Table 1, which follows, shows the number in order of marriages, with per cents, for the three main and eight minor geographic divisions, as well as certain other groups of counties, in both 1915 and 1914. Similar figures for individual counties, arranged alphabetically, may be found in Tables 9 and 10, *post*.

TABLE 1.—Marriages Classified by Number in Order, with Per Cents, for Geographic Divisions*: 1915 and 1914.

Geographic division	Total marriages	Number of marriages				Per cent of marriages			
		First of both parties	First of groom only	First of bride only	Second or over of both	First of both parties	First of groom only	First of bride only	Second or over of both
1915.									
The State	31,451	21,998	3,878	2,617	2,963	69.9	12.4	8.3	9.4
Northern California	2,497	1,828	313	165	191	73.2	12.5	6.6	7.7
Coast counties	1,300	918	160	80	108	72.4	12.6	7.0	8.0
Interior counties	1,228	910	153	76	89	74.1	12.5	6.2	7.2
Central California	17,328	12,311	2,171	1,868	1,488	71.1	12.5	7.8	8.6
San Francisco	6,517	4,907	876	526	508	72.0	12.8	7.7	7.5
Other bay counties	4,152	2,813	543	386	410	67.7	13.1	9.3	9.9
Coast counties	1,685	1,172	193	141	159	70.4	11.6	8.5	9.5
Interior counties	4,094	3,419	559	305	411	72.8	11.9	6.5	8.8
Southern California	11,626	7,854	1,304	1,094	1,284	67.6	12.0	9.4	11.0
Los Angeles	6,981	4,793	778	675	735	68.7	11.1	9.7	10.5
Other counties	4,645	3,061	616	419	549	65.9	13.3	9.0	11.8
Northern and Central California	19,825	14,139	2,484	1,523	1,979	71.3	12.5	7.7	8.5
Coast counties	13,908	9,810	1,772	1,142	1,179	70.6	12.7	8.2	8.5
Interior counties	5,922	4,329	712	381	500	73.1	12.0	6.4	8.5
Metropolitan area	10,909	7,720	1,419	912	918	70.4	12.9	8.3	8.4
Rural counties	8,866	6,419	1,065	611	761	72.5	12.0	6.9	8.6
1914.									
The State	31,902	22,747	3,770	2,514	2,871	71.3	11.8	7.9	9.0
Northern California	2,950	1,967	329	180	204	73.1	12.4	6.8	7.7
Coast counties	1,849	970	176	99	104	71.9	13.1	7.3	7.7
Interior counties	1,301	967	153	81	100	74.3	11.8	6.2	7.7
Central California	17,318	12,567	2,064	1,253	1,434	72.6	11.9	7.2	8.3
San Francisco	6,216	4,711	659	427	419	75.8	10.6	6.9	6.7
Other bay counties	4,250	2,914	505	344	427	68.6	13.3	8.1	10.0
Coast counties	1,903	1,372	216	156	159	72.1	11.3	8.2	8.4
Interior counties	4,949	3,570	624	326	429	72.1	12.6	6.6	8.7
Southern California	11,634	8,243	1,377	1,081	1,233	69.1	11.5	9.1	10.3
Los Angeles	7,441	5,226	788	684	743	70.2	10.6	9.2	10.0
Other counties	4,493	3,017	589	397	490	67.2	13.1	8.8	10.9
Northern and Central California	19,968	14,504	2,398	1,433	1,663	72.6	12.0	7.2	8.2
Coast counties	13,718	9,967	1,616	1,026	1,109	72.6	11.8	7.5	8.1
Interior counties	6,250	4,537	777	407	523	73.6	12.4	6.5	8.5
Metropolitan area	10,466	7,623	1,224	771	846	72.3	11.7	7.4	8.1
Rural counties	9,502	6,879	1,169	662	792	72.4	12.3	7.0	8.3

*For list of counties included in geographic divisions, see page 186.

It appears from Table 1 that of 31,451 marriages in California in 1915, altogether 21,993 or 69.9 per cent were first marriages for both parties; 3,878, or 12.4 per cent, were first marriages for the grooms only; 2,617, or 8.3 per cent, were first marriages for the brides only; and 2,963, or 9.4 per cent, were second marriages or over for both grooms and brides. Of the 31,902 marriages in 1914, there were 22,747, or 71.3 per cent, in which neither party had been married before;

3,770, or 11.8 per cent, where only the grooms were single; 2,514, or 7.9 per cent, where only the brides were single; and 2,871, or 9.0 per cent, where both grooms and brides were widowed or divorced.

Analysis of the per cents for the state is facilitated by a calculation of annual averages for 1906 to 1915, the ten-year period just ended, as given in the following tabular statement:

Number in order	Per cent of marriages										
	Annual average: 1906 to 1915	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906
State totals -----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
First of both parties.....	72.8	69.9	71.8	71.7	72.9	73.0	72.5	73.6	74.1	75.0	74.1
First of groom only.....	11.1	12.4	11.8	11.5	11.0	11.2	11.0	10.5	10.6	10.1	10.5
First of bride only.....	7.8	8.3	7.9	7.9	7.6	7.7	8.0	8.0	7.5	7.6	7.8
Second or over of both.....	8.3	9.4	9.0	8.9	8.5	8.1	8.5	7.9	7.8	7.3	7.6

In the ten-year period 1906 to 1915 an average of 72.8 per cent of all marriages were the first for both parties. The average per cent was 11.1 for marriages which were the first for the groom only and 7.8 for those which were the first for the bride only, the average per cent being 8.3 for marriages which were the second or over for both grooms and brides.

The per cent of marriages with both parties single decreased quite steadily from 74.1 in 1906 to only 69.9 in 1915. The per cent rose considerably between 1906 and 1915 for marriages where only the groom was single but varied comparatively little for those where only the bride was single. Through the ten years there were marked increases in the per cent of marriages which were the second or over for both parties.

In comparison with the average per cents for the ten-year period, the per cents for 1915 and 1914 were relatively low for marriages which were the first for both parties, and rather high for marriages which were the first for the groom only or which were the second or over for both parties, the per cents for the last two years being about the same as the average for the whole period for marriages which were the first for the bride only.

Reference to Table 1, *ante*, indicates that the per cent of first marriages for both parties was much higher in both 1915 and 1914 for the territory north of Tehachapi than for southern California. The per cents for northern California were also higher each year than those for central California.

The per cent of first marriages was about the highest among all geographic divisions each year for San Francisco but was the lowest outside southern California for the adjacent group of suburban counties (Alameda, Contra Costa, Marin and San Mateo). Similarly, the per cent of first marriages was much higher for Los Angeles than for the other counties south of Tehachapi.

Examination of Tables 9 and 10, *post*, shows that the proportion of marriages which were the first for both parties is very high for certain small counties. In 1915 the per cents were highest in decreasing order for the counties of Glenn, Lassen, Calaveras, and Sierra. The one

marriage in Alpine County in 1914 was the first for each party, while the per cent of first marriages was next highest in this year for the counties of Del Norte, Modoc, Mariposa and Sutter.

On the other hand, the per cents of first marriages are very low indeed for individual counties adjoining San Francisco and Los Angeles. Thus, for counties adjoining San Francisco the per cents were only 59.5 and 61.6 for Marin in 1915 and 1914, and as low as 61.6 and 65.4, respectively, for San Mateo. Likewise, the per cents of first marriages for Orange County, adjoining Los Angeles, were only 64.6 in 1915 and 61.6 in 1914. There are only a few other counties in the state where in 1915 or 1914 less than 70.0 per cent of the marriages were first marriages for both parties. The additional counties in 1915 were: Inyo, Los Angeles, Madera, Mono, Napa, Placer, Sacramento, San Benito, San Bernardino, San Diego, Santa Cruz, Solano, Tuolumne and Yuba, and in 1914 were Colusa, Contra Costa, Glenn, Inyo, Madera, Mendocino, Mono, Napa, Sacramento, San Diego, Tehama, Trinity and Tuolumne.

In 1915 there were 3,878 marriages which were the first for only the grooms, as compared with 2,617 which were the first for only the brides. Similarly, in 1914, the first marriages for only the grooms numbered 3,770 against only 2,514 for the first marriages of the brides alone. The excess of first marriages of grooms over first marriages of brides was 1,261, or 48.2 per cent, in 1915, and 1,256, or 50.0 per cent, in 1914. In other words, the number of single men marrying widowed or divorced women, is greater by about one-half than the number of single women marrying widowed or divorced men. In 1906, the first year of registration, the corresponding excess was 564, or 33.7 per cent, about one-third. No main or minor geographic division of California shows any departure from this rule, that there are more unions of bachelors with widows than of maids with widowers. In fact, there are exceptions to the rule, and only slight exceptions at that, for merely three of the whole fifty-eight counties in 1915, and only eight in 1914, the three for 1915 being Placer, Riverside and Stanislaus, and the eight for 1914 being Amador, Colusa, Contra Costa, Napa, San Benito, Santa Barbara, Stanislaus and Sutter. In Amador, Lake and Mariposa, in 1915, and in Del Norte and Riverside, in 1914, there were exactly the same number of marriages where only the grooms were single as where only the brides were single. But in all the remaining counties of the state the rule holds good that there are more marriages between bachelors and widows or divorcees than between spinsters and widowers or divorced men.

Further reference to Table 1, *ante*, shows that the per cent of marriages which were the second or over for both grooms and brides is much higher for southern California than for either central or northern California. The per cent of marriages where both parties were widowed or divorced, was highest of all each year among minor geographic divisions for the counties of southern California other than Los Angeles. In northern and central California the per cents were slightly less for the metropolitan area than for the rural counties and within the urban center were much less for San Francisco (being about the lowest among all minor geographic divisions) than for the group of other bay counties. Marriages between widowed or divorced men and women occur much less in San Francisco than in the suburbs and

somewhat less in an urban center like San Francisco or Los Angeles than in sparsely settled rural districts. Thus, it appears from Tables 9 and 10, *post*, that the counties in which over one-tenth of the marriages were between widowers and widows were mainly suburban or rural counties, as follows: Alpine, Fresno (per cent only 10.4), Inyo, Los Angeles (per cent only 10.5), Madera, Marin, Monterey, Napa, Orange, Placer, San Bernardino, San Diego, San Mateo, Santa Cruz, Sierra and Trinity in 1915; and Colusa, Contra Costa, Lake, Marin, Napa, Orange, Placer, Sacramento, San Diego, San Mateo, Santa Barbara, Sierra, Tehama, Tuolumne and Ventura in 1914.

Status of Grooms.—The table which follows gives for each geographic division in 1915 and 1914 the civil status or marital condition of the grooms—whether single, widowed or divorced—at the time of marriage. Similar figures for individual counties, arranged alphabetically, appear in Tables 9 and 10, *post*.

TABLE 2.—Grooms Classified by Marital Condition, with Per Cents, for Geographic Divisions: 1915 and 1914.

Geographic division	Grooms				Per cent		
	Total	Single	Wid- owed	Di- vorced	Single	Wid- owed	Di- vorced
1915.							
The State	31,451	25,871	2,716	2,864	82.3	8.6	9.1
Northern California	2,497	2,141	187	169	85.7	7.5	6.8
Coast counties	1,209	1,078	101	90	84.9	8.0	7.1
Interior counties	1,228	1,063	86	79	86.6	7.0	6.4
Central California	17,328	14,782	1,296	1,500	85.6	7.5	8.9
San Francisco	6,817	5,783	430	604	84.8	6.3	8.9
Other bay counties	4,152	3,356	376	420	80.8	9.1	10.1
Coast counties	1,065	1,365	135	165	82.0	8.1	9.9
Interior counties	4,094	3,978	355	361	84.7	7.6	7.7
Southern California	11,626	9,218	1,233	1,145	79.5	10.6	9.9
Los Angeles	6,981	5,571	770	640	79.8	11.0	9.2
Other counties	4,645	3,677	463	505	79.1	10.0	10.9
Northern and Central California ..	19,825	16,623	1,483	1,719	83.8	7.5	8.7
Coast counties	13,903	11,582	1,042	1,279	83.3	7.5	9.2
Interior counties	5,922	5,041	441	440	85.1	7.5	7.4
Metropolitan area	10,969	9,139	806	1,024	83.3	7.4	9.2
Rural counties	8,856	7,484	677	695	84.5	7.6	7.9
1914.							
The State	31,902	26,517	2,710	2,675	83.1	8.5	8.4
Northern California	2,650	2,266	194	190	85.5	7.3	7.2
Coast counties	1,349	1,146	112	91	85.0	8.3	6.7
Interior counties	1,301	1,120	82	99	86.1	6.3	7.6
Central California	17,318	14,631	1,286	1,401	84.5	7.4	8.1
San Francisco	6,216	5,370	399	447	86.4	6.4	7.2
Other bay counties	4,250	3,479	313	428	81.8	8.1	10.1
Coast counties	1,903	1,588	166	149	83.5	8.7	7.8
Interior counties	4,049	4,194	378	377	84.8	7.6	7.6
Southern California	11,934	9,620	1,230	1,084	80.6	10.3	9.1
Los Angeles	7,411	6,014	748	679	80.8	10.1	9.1
Other counties	4,493	3,606	482	405	80.3	10.7	9.0
Northern and Central California ..	19,968	16,897	1,480	1,591	84.6	7.4	8.0
Coast counties	13,718	11,583	1,020	1,115	84.5	7.4	8.1
Interior counties	6,250	5,314	460	476	85.0	7.4	7.6
Metropolitan area	10,166	8,849	742	875	84.5	7.1	8.4
Rural counties	9,502	8,048	738	716	84.7	7.8	7.5

Table 2 shows that of the 31,451 grooms in 1915, some 25,871, or 82.3 per cent, were single; 2,716, or 8.6 per cent, were widowed; and 2,864, or 9.1 per cent, were divorced. Of the 31,902 grooms in 1914, the single were 26,517, or 83.1 per cent; the widowed 2,710, or 8.5 per cent; and the divorced 2,675, or 8.4 per cent. It may be noted that for records extending from 1906 the year 1915 is the first in which the number of divorced men among grooms surpassed the number of widowers marrying, the excess for 1915 being 148 (2,864 divorced men against 2,716 widowers among grooms). However, there have been more divorcees than widows among brides in each of the past four years beginning with 1912.

The following tabular statement summarizes the per cents for the state for the ten years, 1906 to 1915:

Marital condition	Per cent of grooms										
	Annual average, 1906 to 1915	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906
State totals -----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Single -----	83.9	82.3	83.1	83.2	83.9	84.2	83.5	84.1	81.8	85.1	84.6
Widowed -----	8.8	8.6	8.5	8.7	8.3	8.5	8.8	9.0	9.3	9.2	9.3
Divorced -----	7.3	9.1	8.4	8.1	7.8	7.3	7.7	6.9	5.9	5.7	6.1

In the decade 1906 to 1915, the annual average per cent of grooms was 83.9 for the single, 8.8 for the widowed, and 7.3 for the divorced. The per cent of bachelor grooms, though increasing slightly in 1907 and again in 1911, decreased generally through the ten-year period from 84.6 in 1906 to only 82.3 in 1915. While the per cent of widowers among grooms varied only slightly through the period, falling merely from 9.3 in 1906 to 8.6 in 1915, yet the per cent of divorced men remarrying increased greatly in the ten years, rising sharply from merely 6.1 at the beginning to no less than 9.1 at the close of the decade just ended.

As compared with the average per cents for the ten-year period, the per cents for 1915 and 1914 were relatively low for bachelor grooms, almost up to the average for widowers marrying again, and very high indeed for divorced men remarrying.

It appears from Table 2, *ante*, that in 1915 and 1914 the proportion of bachelor grooms was highest for northern California and next for central California, being lowest by far for southern California.

The per cents single among grooms were slightly less each year for the metropolitan area than for the rural counties of northern and central California. However, there are wide differences in the metropolitan area between the per cents for San Francisco and the other bay counties. The per cent of bachelor grooms in the metropolis proper was about the highest among geographic divisions, but for the suburban counties each year was the lowest outside southern California. The per cents single among grooms were somewhat greater for Los Angeles than for the other counties south of Tehachapi.

Examination of Tables 9 and 10, *post*, shows that the individual counties in which at least 90.0 per cent of the grooms were single were (in 1915) Calaveras, El Dorado, Glenn, Lassen, Modoc, Mono and Tulare, and (in 1914) Alpine, Calaveras, Del Norte, Mariposa, Modoc, Mono, Nevada, Plumas and Trinity. On the other hand, those in which only 80.0 per cent or less of the grooms were bachelors were Alpine, Inyo, Los Angeles, Marin, Napa, Orange, Placer, Riverside, San Diego, San Mateo and Santa Cruz in 1915, and Colusa, Contra Costa, Napa, Orange, San Diego, San Mateo and Santa Barbara in 1914.

Reference to Table 2, *ante*, shows that the proportion of widowers among the grooms is much greater for southern California than for northern or central California. North of Tehachapi, the per cents were somewhat less for the metropolitan area than for the rural counties.

TABLE 3.—Brides Classified by Marital Condition, with Per Cents, for Geographic Divisions: 1915 and 1914.

Geographic division	Brides				Per cent		
	Total	Single	Wid-owed	Di-voiced	Single	Wid-owed	Di-voiced
1915.							
The State	31, '51	24,610	3,159	3,682	78.2	10.1	11.7
Northern California	2,497	1,993	224	280	79.8	9.0	11.2
Coast counties	1,269	1,007	116	146	79.4	9.1	11.5
Interior counties	1,228	986	108	134	80.3	8.8	10.9
Central California	17,328	13,669	1,606	2,053	78.9	9.3	11.8
San Francisco	6,817	5,433	583	801	79.7	8.6	11.7
Other bay counties	4,152	3,199	414	539	77.0	10.0	13.0
Coast counties	1,665	1,313	151	201	78.8	9.1	12.1
Interior counties	4,694	3,721	458	512	79.3	9.8	10.9
Southern California	11,626	8,908	1,329	1,349	77.0	11.4	11.6
Los Angeles	6,981	5,468	785	728	78.3	11.3	10.4
Other counties	4,645	3,480	544	621	74.9	11.7	13.4
Northern and Central California	19,825	15,662	1,830	2,333	79.0	9.2	11.8
Coast counties	13,903	10,952	1,264	1,687	78.8	9.1	12.1
Interior counties	5,922	4,710	566	646	79.5	9.6	10.9
Metropolitan area	10,909	8,632	907	1,340	78.7	9.1	12.2
Rural counties	8,856	7,030	833	993	79.4	9.4	11.2
1914.							
The State	31,902	25,261	3,179	3,462	79.2	10.0	10.8
Northern California	2,650	2,117	230	303	79.9	8.7	11.4
Coast counties	1,309	1,069	133	147	79.2	9.9	10.9
Interior counties	1,301	1,048	97	156	80.5	7.5	12.0
Central California	17,318	13,820	1,506	1,992	79.8	9.2	11.0
San Francisco	6,216	5,138	476	602	82.7	7.6	9.7
Other bay counties	4,250	3,258	423	572	76.7	9.9	13.4
Coast counties	1,903	1,528	171	204	80.3	9.0	10.7
Interior counties	4,949	3,896	529	524	78.7	10.7	10.6
Southern California	11,934	9,324	1,353	1,257	78.2	11.3	10.5
Los Angeles	7,441	5,910	801	730	79.4	10.8	9.8
Other counties	4,493	3,414	552	527	76.0	12.3	11.7
Northern and Central California	19,968	15,987	1,826	2,205	79.8	9.2	11.0
Coast counties	13,718	10,993	1,200	1,525	80.1	8.8	11.1
Interior counties	6,250	4,944	626	680	79.1	10.0	10.9
Metropolitan area	10,466	8,396	896	1,174	80.2	8.6	11.2
Rural counties	9,502	7,541	930	1,031	79.4	9.8	10.8

It appears from this table that of 31,451 brides in 1913, the single numbered 24,610 or 78.2 per cent; the widowed 3,159, or 10.1 per cent; and the divorced 3,682, or 11.7 per cent. Of the 31,902 brides in 1914, altogether 25,261, or 79.2 per cent, were single; 3,179, or 10.0 per cent, were widowed; and 3,462, or 10.8 per cent, were divorced. It may be added that the divorcees surpassed the widows among brides much more in 1915 (523) and 1914 (283) than in 1913 (58) and 1912 (50), and that for every year prior to 1912 there was even an excess of widows over divorcees among those remarrying.

Within the metropolitan area, moreover, the per cents were very much less for San Francisco (with the minimum per cents widowed among geographic divisions) than for the group of other bay counties. In 1915 and 1914, the per cents widowed among grooms were not far from the same for Los Angeles as for the rest of southern California. Generally speaking, however, more widowers remarry in the rural counties than in metropolitan centers, and in the metropolitan district many more remarry in the suburbs than in the main city.

The individual counties (shown in Tables 9 and 10, *post*) in which widowers formed at least one-tenth (10.0 per cent) of all grooms in 1915 were: Fresno, Inyo, Marin, Napa, Placer, Shasta and Sierra, north of Tehachapi; and Los Angeles, Riverside and San Diego, in southern California. In 1914 the counties in which 10.0 per cent or more of all grooms were widowers were: Contra Costa, El Dorado, Fresno, Inyo, Napa, San Mateo, Santa Cruz and Sierra, in northern and central California; and Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara and Ventura, south of Tehachapi.

Further reference to Table 2, *ante*, shows that the proportion of divorced grooms, as of the widowed, is greater for the counties south of Tehachapi than for those to the north. The per cents divorced among brides were generally less each year for Los Angeles than for the other counties of southern California. North of Tehachapi, however, the per cents divorced were somewhat greater for the metropolitan area than for the rural counties. Within the metropolitan area the per cents divorced were much less in both 1915 and 1914 for San Francisco alone than for the group of other bay counties. Thus, not nearly so many divorced men remarry in the main city itself as in the adjoining suburban counties.

The counties (given in Tables 9 and 10, *post*), having at least 10.0 per cent of the grooms in 1915 divorced were: Alpine, Contra Costa, Inyo, Lake, Madera, Marin, Mariposa, Placer, Plumas, San Benito, San Mateo, Santa Cruz and Yolo, north of Tehachapi; and Orange, Riverside and San Diego, in southern California. The counties with at least one-tenth of the grooms in 1914 divorced men were: Colusa, Contra Costa, Glenn, Madera, Marin, Napa, Sacramento and San Mateo, in northern and central California; and Orange and Santa Barbara, south of Tehachapi. The per cent of divorced men among grooms was notably high in both 1915 and 1914 for Marin (11.9 and 11.0), and for San Mateo (15.2 and 10.9), adjoining San Francisco, as well as for Orange (12.6 and 11.1), adjoining Los Angeles.

Status of Brides.—The following table shows for the several geographic divisions in 1915 and 1914 the civil status or marital condition of the brides—whether single, widowed, or divorced—on the wedding day. Similar figures for individual counties, in alphabetical order, appear in Tables 9 and 10, *post*.

TABLE 3.—Brides Classified by Marital Condition, with Per Cents, for Geographic Divisions: 1915 and 1914.

Geographic division	Brides				Per cent		
	Total	Single	Wid-owed	Di-voiced	Single	Wid-owed	Di-voiced
1915.							
The State	31,551	24,610	3,159	3,682	78.2	10.1	11.7
Northern California	2,497	1,993	224	280	79.8	9.0	11.2
Coast counties	1,269	1,007	116	146	79.4	9.1	11.5
Interior counties	1,228	986	108	134	80.3	8.8	10.9
Central California	17,328	13,699	1,906	2,653	78.9	9.3	11.8
San Francisco	6,817	5,433	583	801	79.7	8.6	11.7
Other bay counties	4,152	3,199	414	539	77.0	10.0	13.0
Coast counties	1,665	1,313	151	201	78.8	9.1	12.1
Interior counties	4,694	3,724	458	512	79.3	9.8	10.9
Southern California	11,626	8,958	1,329	1,349	77.0	11.4	11.6
Los Angeles	6,981	5,468	785	728	78.3	11.3	10.4
Other counties	4,645	3,480	544	621	74.9	11.7	13.4
Northern and Central California	19,825	15,062	1,830	2,333	79.0	9.2	11.8
Coast counties	13,903	10,952	1,261	1,687	78.8	9.1	12.1
Interior counties	5,922	4,710	566	646	79.5	9.6	10.9
Metropolitan area	10,969	8,632	997	1,340	78.7	9.1	12.2
Rural counties	8,856	7,030	833	993	79.4	9.4	11.2
1914.							
The State	31,902	25,261	3,179	3,462	79.2	10.0	10.8
Northern California	2,650	2,117	230	303	79.9	8.7	11.4
Coast counties	1,359	1,069	138	147	79.2	9.9	10.9
Interior counties	1,301	1,048	97	156	80.5	7.5	12.0
Central California	17,318	13,820	1,506	1,992	79.8	9.2	11.0
San Francisco	6,216	5,138	476	602	82.7	7.6	9.7
Other bay counties	4,250	3,258	429	572	76.7	9.9	13.4
Coast counties	1,903	1,528	171	204	80.3	9.0	10.7
Interior counties	4,949	3,896	529	524	78.7	10.7	10.6
Southern California	11,934	9,324	1,353	1,257	78.2	11.3	10.5
Los Angeles	7,441	5,910	801	730	79.4	10.8	9.8
Other counties	4,493	3,414	552	527	76.0	12.3	11.7
Northern and Central California	19,068	15,037	1,826	2,205	79.8	9.2	11.0
Coast counties	13,718	10,993	1,200	1,525	80.1	8.8	11.1
Interior counties	6,250	4,944	626	680	79.1	10.0	10.9
Metropolitan area	10,466	8,396	896	1,174	80.2	8.6	11.2
Rural counties	9,502	7,541	930	1,031	79.4	9.8	10.8

It appears from this table that of 31,451 brides in 1913, the single numbered 24,610 or 78.2 per cent; the widowed 3,159, or 10.1 per cent; and the divorced 3,682, or 11.7 per cent. Of the 31,902 brides in 1914, altogether 25,261, or 79.2 per cent, were single; 3,179, or 10.0 per cent, were widowed; and 3,462, or 10.8 per cent, were divorced. It may be added that the divorcees surpassed the widows among brides much more in 1915 (523) and 1914 (283) than in 1913 (58) and 1912 (50), and that for every year prior to 1912 there was even an excess of widows over divorcees among those remarrying.

The tabular statement which follows gives a summary of the per cents for the state in the decade just closed:

Marital condition	Per cent of brides										
	Annual average 1906 to 1915	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906
State totals	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Single	80.7	78.2	79.2	79.6	80.6	80.7	80.5	81.6	81.6	82.6	81.9
Widowed	10.0	10.1	10.0	10.1	9.6	9.7	10.0	10.0	10.7	10.0	10.2
Divorced	9.3	11.7	10.8	10.3	9.8	9.6	9.5	8.4	7.7	7.4	7.9

In the ten years, 1906 to 1915, the annual average per cent of grooms was 80.7 for the single, 10.0 for widows, and 9.3 for divorcees. The per cent of spinster brides, though rising a little in 1907, and also in 1911, dropped generally throughout the ten years from 81.9 in 1906 to only 78.2 in 1915. While the per cent of widows among brides changed hardly at all through the period, being 10.2 in 1906 and 10.1 in 1915, yet the per cent of divorcees remarrying increased greatly from only 7.9 at the beginning to as much as 11.7 at the close of the decade. In fact, the per cent divorced among brides has risen steadily ever since 1907, as follows: 1907, 7.4; 1908, 7.7; 1909, 8.4; 1910, 9.5; 1911, 9.6; 1912, 9.8; 1913, 10.3; 1914, 10.8, and 1915, 11.7.

In comparison with the average per cents for the whole decade, the per cents for 1915 and 1914 were relatively low for spinster brides, about the average for widows remarrying, and notably high for divorcees marrying again.

It may be noted that in 1915 the widowed grooms numbered only 2,716 against 3,159 for the brides, and that in 1914 the widowers totaled 2,710 and the widows 3,179. That is, the widows outnumbered the widowers by 443, or 16.3 per cent, in 1915 and by 469, or 17.3 per cent, in 1914. Likewise, the divorced grooms in 1915 numbered only 2,864 and the brides 3,682, while in 1914, similarly, the divorced men remarrying totaled 2,675 and the women 3,462. In other words, the number of divorced women remarrying exceeded that of divorced men by 818, or 28.6 per cent in 1915 and by 787, or 29.4 per cent, in 1914.

It appears from Table 3, *ante*, that in 1915 and 1914 relatively more brides were spinsters in the counties north of Tehachapi than in those to the south.

The per cents single among brides were nearly the same for the metropolitan area as for the rural counties north of Tehachapi. However, the per cents of spinsters among brides for San Francisco alone were about the highest among geographic divisions, while the corresponding per cents for the suburban counties each year were the lowest outside southern California. The per cents single among brides were much higher in both 1915 and 1914 for Los Angeles than for the rest of southern California.

Examination of Tables 9 and 10, *post*, shows that the individual counties in which at least 90.0 per cent of the brides were single were Glenn and Lassen, in 1915, and Alpine, Amador, Del Norte and Sutter, in 1914. On the other hand, the counties in which only 80.0 per cent

or less of the brides were single, were: In 1915, Alameda, Colusa, Contra Costa, Del Norte, Imperial, Inyo, Kern, Los Angeles, Madera, Marin, Mono, Monterey, Napa, Orange, Placer, Plumas, Sacramento, San Benito, San Bernardino, San Diego, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Trinity, Tuolumne and Yuba; and in 1914, Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Inyo, Kern, Lake, Los Angeles, Madera, Marin, Mendocino, Mono, Napa, Orange, Placer, Plumas, Sacramento, San Bernardino, San Diego, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Shasta, Sierra, Siskiyou, Sonoma, Tehama, Trinity, Tuolumne, Ventura and Yolo.

Reference to Table 3, *ante*, shows that the proportion of widows among brides, as of widowers among grooms, is much higher for southern California than for northern or central California. The per cents for widows among brides in 1915 and 1914 were somewhat less for Los Angeles than for the other counties south of Tehachapi. The per cents were also slightly less for the metropolitan area than for the rural counties of northern and central California. The per cents widowed were about the lowest of all each year for San Francisco but on the other hand were about the highest outside southern California for the group of other bay counties. As with widowers, so with widows, somewhat more remarry in the country districts than in urban centers, and, in the latter, many more remarry in the suburbs than in the metropolis proper.

The individual counties (shown in Tables 9 and 10, *post*) in which widows formed at least one-tenth (10.0 per cent) of all brides in 1915 were Colusa, Fresno, Inyo, Kings, Madera, Marin, Monterey, Napa, Nevada, Placer, Sacramento, San Benito, San Joaquin, Shasta, Sierra, Solano, Sonoma, Trinity and Yuba, in northern and central California; and Los Angeles, Orange, San Bernardino, San Diego and Ventura, in southern California. In 1914 the counties in which 10.0 per cent or more of the brides were widows, were: North of Tehachapi, Butte, Fresno, Inyo, Kern, Lake, Madera, Marin, Mariposa, Mendocino, Napa, Plumas, Sacramento, San Joaquin, Sierra, Tehama, Tuolumne and Yolo; and south of Tehachapi, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura.

Further reference to Table 3, *ante*, shows that the proportion of divorced brides, unlike that of grooms, is slightly less for southern California than for northern or central California. The per cents divorced were less both years for Los Angeles (about the minimum among geographic divisions) than for the other counties south of Tehachapi. In northern and central California, however, the per cents divorced among brides were somewhat greater for the metropolitan area each year than for the outlying rural counties. Within the metropolitan area, on the contrary, the per cent of divorced brides (as of grooms) is much less for San Francisco than for the other bay counties, the suburban counties showing about the maximum per cents among geographic divisions in 1915 and 1914 for divorcees among brides. While there is not a very marked difference between the metropolitan area and the rural districts in the per cent divorced, whether among grooms or brides, yet there is a sharp contrast between the metropolis proper and the surrounding suburbs in the proportion of

divorced persons among those remarrying, since both divorcees and divorced men remarry much less in the main city than in the adjacent suburbs.

The individual counties (given in Tables 9 and 10, *post*) in which at least 10.0 per cent of all brides in 1915 were divorced were: Alameda, Alpine, Butte, Contra Costa, Del Norte, El Dorado, Humboldt, Inyo, Kern, Lake, Madera, Marin, Mariposa, Modoc, Mono, Monterey, Napa, Placer, Plumas, Sacramento, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Siskiyou, Solano, Sonoma, Tehama, Tuolumne, Yolo and Yuba, in northern and central California; and Imperial, Los Angeles, Orange, San Bernardino, San Diego and Santa Barbara, in southern California. The counties with 10.0 per cent or more divorced brides in 1914 were: North of Tehachapi, Alameda, Butte, Colusa, Contra Costa, Glenn, Kern, Kings, Lassen, Marin, Mendocino, Mono, Monterey, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Tehama, Trinity, Tuolumne, Yolo and Yuba; and south of Tehachapi, Imperial, Orange and San Diego. The per cent of divorced brides was particularly high each year for Marin (17.3 in 1915 and 19.3 in 1914), and for San Mateo (18.2 and 16.6), adjacent to San Francisco, as well as for Orange (13.6 and 16.4), adjacent to Los Angeles.

In general, the proportion widowed and divorced, both among grooms and brides, is notably high for counties like Marin and San Mateo in the north and Orange in the south, adjacent to the great cities of San Francisco and Los Angeles. Analysis of marriage rates showed that there is a tendency on the part of many couples belonging to these cities to go to the suburbs to be married. This preference for a suburban town rather than the city proper as a place of marriage is most marked on the part of widowed and divorced persons marrying again, especially on the part of the divorced. The secretive divorcee even more than the coy spinster seeks the privacy of a Gretna Green outside the home county.

The Widowed and Divorced.—Statistics for California for several years past show that the proportion of bachelors among grooms and of spinsters among brides is diminishing somewhat, while in both instances the proportions widowed and divorced, especially the latter, are growing notably. Although the great bulk of marriages in this state occur between single men and single women, yet the most striking gains are shown by persons of former matrimonial experience, particularly those for whom the previous marriage was ended by divorce rather than death.

The following tabular statement summarizes for California certain data available for only the nine years, 1907 to 1915, the figures for last year being contrasted with those for the first year covered by special tabulations and the annual average per cents for the nine-year period being presented also as additional information in point.

Marital condition	Marriages		Per cents		Annual average per cent: 1907 to 1915
	1915	1907	1915	1907	
State totals -----	31,451	23,006	100.0	100.0	100.0
Bachelors with-----	25,871	19,573	82.3	85.1	83.8
Spinsters -----	21,993	17,253	69.9	75.0	72.7
Widows -----	1,643	1,263	5.3	5.5	5.3
Divorcees -----	2,235	1,057	7.1	4.6	5.8
Widowers or divorced men with-----	5,580	3,432	17.7	14.9	16.2
Spinsters -----	2,617	1,742	8.3	7.6	7.9
Widows -----	1,516	1,019	4.8	4.5	4.7
Divorcees -----	1,447	641	4.6	2.8	3.6
Spinsters with-----	24,610	18,095	78.2	82.6	80.5
Bachelors -----	21,993	17,253	69.9	75.0	72.7
Widows -----	1,150	1,087	3.6	4.5	4.0
Divorced men -----	1,467	705	4.7	3.1	3.8
Widows or divorcees with-----	6,841	4,010	21.8	17.4	19.5
Bachelors -----	3,878	2,320	12.4	10.1	11.1
Widows -----	1,568	1,080	5.0	4.6	4.7
Divorced men -----	1,395	621	4.4	2.7	3.7

Analysis of these figures indicates that bachelors find divorcees very attractive indeed. The weddings between bachelors and divorcees totaled 2,235 in 1915, or 7.1 per cent of all marriages, while unions between bachelors and widows were only 1,643, or 5.3 per cent of all. In 1907 (as well as in 1908 and 1909), there were more marriages of bachelors with widows than with divorcees. Moreover, the recent tendency for bachelors to marry divorcees has been increasing continuously. Thus, the per cent of total marriages which were unions between bachelors and divorcees rose successively in the whole nine years from 1907 to 1915 as follows: 4.6, 4.9, 5.2, 5.8, 5.9, 6.1, 6.2, 6.7 and 7.1.

In less degree than between bachelors and divorcees, marriages also occur between single women and divorced men somewhat more than between spinsters and widowers. The marriages of single women and divorced men were 1,467, or 4.7 per cent of all, in 1915, as compared with merely 1,150, or 3.6 per cent, for those uniting spinsters with widowers. Furthermore, while there were more marriages of bachelors with divorcees than with widows for as many as six years beginning with 1910, there were more weddings of spinsters with divorced men than with widowers only for the four years beginning with 1912. This explanation based on the extended tables from which the above tabular statement was compiled, accounts for the fact that the annual average per cents for the whole nine years covered show relatively more marriages between bachelors and divorcees (5.8) than between bachelors and widows (5.3), but in contrast with the per cents for 1915 also show slightly more unions of spinsters with widowers (4.0) than of spinsters with divorced men (3.8).

In contrast with the preference of bachelors and spinsters for the divorced rather than for the widowed, it seems that where men or women who have been married before wed again with those of like prior experience, the mate chosen is more often a widow or widower bereft by death than a person of either sex left alone by court decree.

In 1915, the marriages of widowers or divorced men with widows totaled 1,516, or 4.8 per cent of the aggregate, against merely 1,447, or 4.6 per cent, for such marriages with divorcees. Similarly, the weddings of widows or divorcees with widowers were 1,568, or 5.0 per cent, against only 1,395, or 4.4 per cent, for such unions with divorced men. The annual average per cents for the nine years, 1907 to 1915, for which the data are available likewise, show that the average per cent for marriages of widowers or divorced men with widows was 4.7 against merely 3.6 for such marriages with divorcees, and also that the average per cent for marriages of widows or divorcees with widowers was 4.7 against only 3.7 for such marriages with divorced men.

NATIVITY OF CALIFORNIA BRIDES.

Race and Nativity.—The table below gives for California in 1915 and 1914 a classification of brides by race, nativity and marital condition, as well as the per cent distribution by marital condition. The table also shows, for both years, the racial distinction of the non-Caucasian brides.

TABLE 4.—Brides Classified by Race, Nativity, and Marital Condition, with Per Cent Distribution by Marital Condition, for California: 1915 and 1914.

Race or nativity	Brides				Per cent		
	Total	Single	Widowed	Divorced	Single	Widowed	Divorced
1915							
The State	31,451	24,610	3,150	3,682	78.2	10.1	11.7
White*	30,011	23,341	3,051	3,619	77.8	10.2	12.0
Born in California	10,809	9,107	589	1,113	84.3	5.4	10.3
Born in other states	13,628	9,832	1,655	2,041	72.9	12.1	15.0
Foreign born	5,574	4,302	807	465	77.2	14.5	8.3
Non-Caucasian	1,440	1,269	108	63	88.1	7.5	4.4
Negro	415	284	85	46	68.4	20.5	11.1
Indian	67	50	5	3	88.0	7.5	4.5
Chinese	51	46	4	1	90.2	7.8	2.0
Japanese	907	880	14	13	97.0	1.6	1.4
1914							
The State	31,902	25,261	3,179	3,462	79.2	10.0	10.8
White	30,445	24,023	3,043	3,379	78.9	10.0	11.1
Born in California	11,073	9,439	631	1,003	85.2	5.7	9.1
Born in other states	13,183	9,644	1,612	1,927	73.2	12.2	14.6
Foreign born	6,189	4,940	800	449	79.8	12.9	7.3
Non-Caucasian	1,457	1,238	136	83	85.0	9.3	5.7
Negro	469	290	107	72	61.8	22.8	15.4
Indian	64	56	4	4	87.5	6.3	6.2
Chinese	37	27	8	2	73.0	21.6	5.4
Japanese	887	905	17	5	97.5	1.9	0.6

Considering first the non-Caucasian brides, one will observe that among them the per cents single were 88.1 in 1915 and 85.0 in 1914; the widowed, 7.5 and 9.3; and the divorced, 4.4 and 5.7. For the ten years, 1906 to 1915, the annual average per cents for all non-Caucasian brides together were as follows: Single, 80.6; widowed, 12.3; and divorced, 7.1.

The racial distinction of non-Caucasian brides is available for only the five years, 1911 to 1915, the annual average per cents for this five-year period being shown in the following tabular statement:

Race	Annual average per cent of non-Caucasian brides: 1911 to 1915			
	Total	Single	Widowed	Divorced
State totals	100.0	86.4	8.1	5.5
Negro	100.0	65.9	20.2	13.9
Indian	100.0	84.9	8.4	6.7
Chinese	100.0	85.8	11.2	3.0
Japanese	100.0	97.7	1.5	0.8

The per cents for 1915 and 1914 in Table 4, *ante*, are less convenient for comparisons between the races than the annual average per cents for 1911 to 1915. The annual averages show that the per cent single was 97.7 among Japanese brides, 85.8 among the Chinese, 84.9 among Indians, and only 65.9 among Negro brides. The average per cent widowed was 20.2 for Negro brides, but only 11.2 for Chinese and 8.4 for Indians, being merely 1.5 for Japanese. Similarly, the average per cent divorced was 13.9 for Negro brides, but only 6.7 for Indians and 3.0 for Chinese, being merely 0.8 for Japanese brides.

The per cents for non-Caucasians differ greatly from the per cents for white brides, the proportion of single brides among the non-Caucasians being relatively large on account of the preponderance of single brides among the Japanese, now the most numerous non-Caucasian element in the population of California. Incidentally, it may be noted that over nine-tenths of all marriages of Japanese in California take place at San Francisco, the per cent of all Japanese marriages in the state occurring at this port being 94.7 for 1915 and 93.9 for 1914, while the annual average per cent was 94.3 for 1911 to 1915. It seems that expectant Japanese bridegrooms from various points in the interior assemble at San Francisco to await the arrival of trans-Pacific steamships bringing groups of "picture brides" direct from the Flowery Kingdom, since the certificates for Japanese weddings are filed in dozens after the ships reach port.

However, the 1,440 non-Caucasian brides in 1915 and the 1,457 in 1914, form only 4.6 of the state total each year. The Japanese brides in 1915 and 1914 numbered 907 and 887, representing per cents of 2.9 and 2.8 of state aggregates; the Negro brides numbered 415 and 469 (or 1.3 and 1.5 per cent); the Indian brides 67 and 64 (or 0.2 per cent each year); and the Chinese brides 51 and 37 (or 0.2 and 0.1 per cent). On account of the relatively small (though generally increasing) proportion of non-Caucasians among California brides, and also because of the wide divergence between the non-Caucasian races in this state (with Japanese and Chinese from the Orient outnumbering somewhat American-born Negroes and Indians), attention will be directed in the following discussion only to the facts for the whites.

Of the 30,011 white brides in 1915 and the 30,445 in 1914, shown in Table 4, *ante*, the single were 23,341 and 24,023, respectively, the widowed 3,051 and 3,043; and the divorced 3,619 and 3,379.

The white brides born in California numbered 10,809 and 11,073 in 1915 and 1914, and among them there were, respectively, 9,107 and 9,439 single, 589 and 631 widowed, and 1,113 and 1,003 divorced.

The brides born in other states totaled 13,628 and 13,183 in 1915 and 1914, of whom the single were, respectively, 9,932 and 9,644, the widowed 1,655 and 1,612, and the divorced 2,041 and 1,927.

The foreign born white brides were 5,574 in 1915 and 6,189 in 1914, among whom there were, respectively, 4,302 and 4,940 single, 807 and 800 widowed, and 465 and 449 divorced.

Analysis of the per cents in Table 4 for various classes of white brides is aided by the presentation in the following tabular statement of the annual averages for the ten-year period just ended:

Nativity	Annual average per cent of white brides: 1906 to 1915			
	Total	Single	Widowed	Divorced
State totals	100.0	80.6	10.0	9.4
Born in California.....	100.0	86.4	5.8	7.8
Born in other states.....	100.0	75.3	12.4	12.3
Foreign born	100.0	80.2	13.5	6.3

The per cents for spinsters among all white brides in both 1915 and 1914, 77.8 and 78.9, respectively, stand somewhat below the annual average of 80.6 for 1906 to 1915. The per cents for widowed brides, 10.2 and 10.0, are about the same as the average of 10.0, while the per cents for the divorced, 12.0 and 11.1, rise far above the average of 9.4 for the whole ten years. It may be added that the per cent divorced among all white brides increased quite steadily throughout the decade just ended, as follows: 7.8 (1906), 7.4, 7.7, 8.4, 9.6, 9.7, 10.0, 10.5, 11.1 and 12.0 (1915).

Among white brides born in California, the per cents single in 1915 and 1914, respectively, 84.3 and 85.2, fall considerably below the average of 86.4; the per cents widowed, 5.4 and 5.7, are nearly the same as the average of 5.8; and the per cents divorced, 10.3 and 9.1, stand much above the average of 7.8. The per cent divorced among native Californian brides rose successively through the ten-year period thus: 6.6 (1906), 6.0, 6.3, 7.0, 7.7, 8.0, 8.3, 8.9, 9.1 and 10.3 (1915).

Among white brides born in other states the per cents single in the last two years, 72.9 and 73.2, drop considerably below the average of 75.3 for the ten-year period; the per cents widowed, 12.1 and 12.2, are almost the same as the average of 12.4; and the per cents divorced, 15.0 and 14.6, rise much higher than the average of 12.3. Among brides born in other states the per cents for divorcees were successively 10.4, 10.0, 10.4, 11.1, 12.8, 12.8 again, 13.1, 13.4, 14.6 and 15.0 in 1906 to 1915, increasing generally through the whole ten years.

Among foreign born white brides, the per cents for spinsters in 1915 and 1914, 77.2 and 79.8, are somewhat below the average of 80.2 for 1906 to 1915; the per cents for widows, 14.5 and 12.9, are one above and one below the average of 13.5; and the per cents for divorcees, 8.3 and 7.3, stand somewhat above the average of 6.3. The per cents divorced among foreign born brides were successively 5.1, 4.8, 5.3, 6.0,

6.6, 6.3, 6.4, 7.1, 7.3 and 8.3, in 1906 to 1915, having fluctuated during the decade while increasing in the five years last past. Moreover, the per cent of divorcees among foreign born white brides, 6.3, as an average for the whole ten-year period just ended, is much less than among brides born in California, 7.8, and very much less indeed than among brides born in other states, 12.3.

Status of White Brides.—Table 5 below, shows, by numbers and per cents, the civil status or marital condition of the white brides at the time of marriage—whether single, widowed, or divorced—for the several geographic divisions of the state in both 1915 and 1914.

TABLE 5.—White Brides Classified by Marital Condition, with Per Cents, for Geographic Divisions: 1915 and 1914.

Geographic division	White brides				Per cent		
	Total	Single	Widowed	Divorced	Single	Widowed	Divorced
1915							
The State	30,011	23,341	3,061	3,619	77.8	10.2	12.0
Northern California	2,444	1,945	221	278	79.6	9.0	11.4
Coast counties	1,237	975	116	146	78.8	9.4	11.8
Interior counties	1,207	970	105	132	80.4	8.7	10.9
Central California	16,234	12,652	1,554	2,028	77.9	9.6	12.5
San Francisco	5,889	4,534	566	789	77.0	9.6	13.4
Other bay counties	4,076	3,146	396	534	77.2	9.7	13.1
Coast counties	1,654	1,307	148	199	79.0	9.0	12.0
Interior counties	4,615	3,665	444	506	79.4	9.6	11.0
Southern California	11,333	8,744	1,276	1,313	77.2	11.2	11.6
Los Angeles	6,777	5,332	741	704	78.7	10.9	10.4
Other counties	4,556	3,412	535	609	74.9	11.7	13.4
Northern and Central California	18,678	11,597	1,775	2,306	78.2	9.5	12.3
Coast counties	12,866	9,962	1,226	1,668	77.5	9.5	13.0
Interior counties	5,822	4,635	549	638	79.6	9.4	11.0
Metropolitan area	9,965	7,680	962	1,323	77.1	9.6	13.3
Rural counties	8,713	6,917	813	983	79.4	9.3	11.3
1914							
The State	30,445	24,023	3,043	3,379	78.9	10.0	11.1
Northern California	2,588	2,063	224	301	79.7	8.7	11.6
Coast counties	1,330	1,053	131	146	79.2	9.8	11.0
Interior counties	1,258	1,010	93	155	80.3	7.4	12.3
Central California	16,242	12,945	1,534	1,863	79.1	9.4	11.5
San Francisco	5,332	4,282	457	593	80.3	8.6	11.1
Other bay counties	4,168	3,207	404	557	76.9	9.7	13.4
Coast counties	1,888	1,518	169	201	80.4	9.0	10.6
Interior counties	4,854	3,338	504	512	79.1	10.4	10.5
Southern California	11,615	9,115	1,285	1,215	78.4	11.1	10.5
Los Angeles	7,211	5,762	753	696	79.9	10.4	9.7
Other counties	4,404	3,353	532	519	76.1	12.1	11.8
Northern and Central California	18,830	14,008	1,758	2,164	79.2	9.3	11.5
Coast counties	12,718	10,080	1,161	1,497	79.1	9.1	11.8
Interior counties	6,112	4,848	597	667	79.3	9.8	10.9
Metropolitan area	9,500	7,489	861	1,150	78.8	9.1	12.1
Rural counties	9,330	7,419	897	1,014	79.5	9.6	10.9

This table shows that the per cent of spinsters among white brides was somewhat higher in both 1915 and 1914 for the counties north of Tehachapi than for those to the south. The per cents single were slightly less for the metropolitan area than for the rural counties north of Tehachapi, but were greater in general for the metropolis proper than for the suburban counties. The per cent of spinsters among brides was much greater each year for Los Angeles than for the rest of southern California.

The proportion of widows among brides is considerably higher for southern California than for northern or central California. The per cents widowed were about the same for the metropolitan area as for the rural counties north of Tehachapi but within the metropolitan area were less for San Francisco alone than for the group of other bay counties. The per cent of widows was also much less in both 1915 and 1914 for Los Angeles than for the other counties south of Tehachapi. Of white widows it may therefore be said, in general, as of widowers and widows of all races taken together, that more remarry in rural districts than in urban centers, but that in the metropolitan area more remarry in the suburbs than in the main city.

The proportion of divorcees among white brides, unlike that of widows, is somewhat less for the counties south of Tehachapi than for those to the north. The per cents divorced in 1915 and 1914 were much greater for the metropolitan area than for the rural counties north of Tehachapi. Within the metropolitan area, however, the proportion of divorcees is generally less for San Francisco than for the other bay counties. The per cents divorced are also much less for Los Angeles than for the rest of southern California. Divorcees, unlike widows, remarry more in the metropolitan area than in the rural counties, while both divorcees and widows, like divorced men and widowers, remarry more in the suburbs of a great city than within the metropolis itself.

Status of White Brides (by Nativity).—The following table shows, for the several geographic divisions in 1915 and 1914, the civil status or marital condition—as single, widowed, or divorced—of the white brides classified by nativity—as born in California, born in other states, or foreign born. For convenience in presentation, the absolute numbers are omitted and only the per cent distributions are given here. The absolute numbers may be found, however, in Tables 11 and 12, *post*.

TABLE 6.—Per Cent Distribution, by Marital Condition, of White Brides Classified by Nativity, for Geographic Divisions: 1915 and 1914.

Geographic division	White brides								
	Per cent single among those—			Per cent widowed among those—			Per cent divorced among those—		
	Born in California	Born in other states	Foreign born	Born in California	Born in other states	Foreign born	Born in California	Born in other states	Foreign born
1915									
The State	84.3	72.9	77.2	5.4	12.1	14.5	10.3	15.0	8.3
Northern California	85.5	71.0	72.6	5.6	12.6	16.4	8.9	16.4	11.0
Coast counties	85.5	66.7	73.4	5.0	14.7	16.9	9.5	18.6	9.7
Interior counties	85.4	74.3	71.2	6.3	11.0	15.3	8.3	14.7	13.5
Central California	83.6	70.2	78.3	5.5	12.8	13.1	10.9	17.0	8.6
San Francisco	82.5	66.1	80.9	5.4	14.1	10.9	12.1	19.8	8.2
Other bay counties	83.5	68.9	76.0	5.8	12.4	14.5	10.7	18.7	9.5
Coast counties	85.8	68.9	76.9	3.8	14.9	14.1	10.4	16.2	9.0
Interior counties	84.3	75.5	75.8	5.9	11.2	16.0	9.8	13.3	8.2
Southern California	85.5	75.1	75.8	5.3	11.6	16.7	9.2	13.3	7.5
Los Angeles	86.8	77.5	75.4	4.8	10.8	17.4	8.4	11.7	7.2
Other counties	84.1	71.4	76.4	5.9	12.9	15.5	10.0	15.7	8.1
Northern and Central California	83.9	70.3	77.9	5.5	12.8	13.3	10.6	16.9	8.8
Coast counties	83.6	67.5	78.7	5.3	13.7	12.6	11.1	18.6	8.7
Interior counties	84.6	75.3	75.3	6.0	11.1	15.9	9.4	13.6	8.8
Metropolitan area	82.9	67.3	79.3	5.6	13.4	12.1	11.5	19.3	8.6
Rural counties	85.0	73.3	75.3	5.4	12.1	15.7	9.6	14.6	9.0
1914									
The State	85.2	73.2	79.8	5.7	12.2	12.9	9.1	14.6	7.3
Northern California	84.2	71.7	79.4	6.1	10.8	14.1	9.7	17.5	6.5
Coast counties	83.8	68.3	80.7	7.1	13.3	13.4	9.1	18.4	5.9
Interior counties	84.8	74.3	76.7	5.0	8.9	15.5	10.2	16.8	7.8
Central California	84.6	70.4	79.9	5.9	12.7	12.0	9.5	16.9	8.1
San Francisco	85.5	68.3	82.7	5.8	12.5	9.3	8.7	19.2	8.0
Other bay counties	82.2	68.6	77.4	6.0	13.2	13.0	11.8	18.2	9.6
Coast counties	87.6	70.5	75.6	4.5	12.6	15.6	7.9	16.9	8.8
Interior counties	84.4	73.0	78.9	6.6	12.7	14.8	9.0	14.3	6.3
Southern California	88.2	75.2	79.7	4.7	12.0	14.5	7.1	12.8	5.8
Los Angeles	88.9	76.9	81.7	4.9	11.1	13.5	6.2	12.0	4.8
Other counties	87.4	72.1	75.7	4.4	13.6	16.1	8.2	11.0	7.9
Northern and Central California	84.5	70.5	79.9	6.0	12.5	12.2	9.5	17.0	7.9
Coast counties	84.5	68.7	80.3	5.8	12.8	11.3	9.7	18.5	8.1
Interior counties	84.5	73.3	78.7	6.2	11.9	14.8	9.3	14.8	6.5
Metropolitan area	83.9	68.4	80.9	5.9	12.8	10.5	10.2	18.8	8.6
Rural counties	85.1	72.3	78.3	6.0	12.2	14.8	8.9	15.5	6.9

Table 6 shows that the per cents single were no less than 84.3 in 1915 and 85.2 in 1914, among white brides born in California, as compared with 77.2 and 79.8 among foreign born white brides and only 72.9 and 73.2 among those born in other states, the average per cents for 1906 to 1915 being 86.4 for California born brides, 80.2 for the foreign, and merely 75.3 for brides born in other states. For every geographic division in both 1915 and 1914, without exception, the per cent single is highest of all among brides born in California. As a rule, too, the per cent single is next highest among foreign born brides and lowest of all among those born elsewhere in the United States than here, slight exceptions appearing for only two minor geographic divisions in 1915 alone.

In both 1915 and 1914 the per cent was much higher for each class of brides in Los Angeles (except only the foreign born in 1915 alone) than for those in the other counties of southern California. However, for the metropolitan area, as compared with the rural counties north of Tehachapi, the per cent single was higher each year for the former than for the latter only in the case of foreign born brides.

The per cents widowed were no less than 14.5 and 12.9 among foreign born brides and 12.1 and 12.2 among those born in other states against merely 5.4 and 5.7 among white brides born in California, the average per cents for the ten years last past being 13.5 for the foreign born and 12.4 for other Americans, but merely 5.8 for native Californians. In general, the per cent widowed in 1915 and 1914 was highest of all among foreign born white brides, slight exceptions appearing for only San Francisco and one other minor geographic division in either year. Without exception, the per cent widowed is decidedly lowest among white brides born in the Golden State.

In general, though with some slight exceptions, the per cent widowed was less among each class by nativity for Los Angeles than for the rest of southern California; for the metropolitan area than for the rural counties north of Tehachapi; and for San Francisco than for the other bay counties. No marked exceptions appear in either 1915 or 1914 to the general rule that in each element of the population more widows remarry in rural districts than in urban centers, and in the latter more remarry in the suburbs than in the main city.

The per cents divorced were as great as 15.0 and 14.6 in 1915 and 1914, among white brides born in other states, but only 10.3 and 9.1 among those born in California, and merely 8.3 and 7.3 among the foreign born, the average per cents for 1906 to 1915 being 12.3 for other Americans, but merely 7.8 for Californians and 6.3 for the foreign born. Everywhere in California in both 1915 and 1914, generally speaking, the per cent divorced was greatest among brides born in other states, next among those born in this state, and lowest of all among the foreign born. Slight exceptions to the rule, due to unusually high per cents divorced among foreign born brides, appear for the coast and interior counties of northern California in 1915 as well as for the coast counties of central California in 1914.

The per cent divorced was much less in both 1915 and 1914 among all classes of brides in Los Angeles than in the other counties of southern California, without any exception whatever, and was likewise generally less for each element except other Americans in San Francisco

than in the adjoining bay counties. However, the per cents divorced were greater each year for the metropolitan area than for the rural counties north of Tehachapi for each class of brides with only a slight exception for the foreign born in 1915 alone. The rule that widows remarry more in rural districts than in urban centers holds good, generally speaking, for each class of white brides, whether born in California, in other states, or in foreign countries. Similarly, the rule that divorcees, unlike widows, remarry more in the metropolitan area than in the rural counties holds true quite generally for each of the three elements of the population. Divorcees and widows are alike, however, in that for substantially each element of the population—Californian, other American, or foreign—somewhat more remarry in the suburban territory than within the metropolis proper.

Nativity of White Brides.—The following table shows, by numbers and per cents, the nativity of white brides—as born in California, born in other states, or foreign born—for the several geographic divisions in 1915 and 1914. Corresponding figures, with others, may be found for individual counties, arranged alphabetically, in Table 15, *post*.

TABLE 7.—White Brides Classified by Nativity, with Per Cents, for Geographic Divisions: 1915 and 1914.

Geographic division	White brides				Per cent		
	Total	Born in California	Born in other states	Foreign born	Born in California	Born in other states	Foreign born
1915.							
The State	30,011	10,809	13,628	5,574	36.0	45.4	18.6
Northern California	2,444	1,411	715	318	57.7	29.3	13.0
Coast counties	1,237	724	306	207	58.5	24.8	16.7
Interior counties	1,207	687	409	111	56.9	33.9	9.2
Central California	16,234	7,277	5,533	3,424	44.8	34.1	21.1
San Francisco	5,880	2,443	1,818	1,628	41.5	30.9	27.6
Other bay counties	4,076	1,985	1,350	791	47.5	33.1	19.4
Coast counties	1,654	867	531	256	52.4	32.1	15.5
Interior counties	4,615	2,032	1,834	749	44.0	39.8	16.2
Southern California	11,393	2,121	7,380	1,832	18.7	65.1	16.2
Los Angeles	6,777	1,119	4,483	1,175	16.5	66.2	17.3
Other counties	4,536	1,002	2,897	657	22.0	63.6	14.4
Northern and Central California	18,078	8,668	6,248	3,742	48.5	33.5	20.0
Coast counties	12,876	5,969	4,005	2,882	46.4	31.2	22.4
Interior counties	5,822	2,719	2,243	860	46.7	38.5	14.8
Metropolitan area	9,965	4,378	3,168	2,419	43.9	31.8	21.3
Rural counties	8,713	4,290	3,080	1,323	49.5	35.3	15.2
1914.							
The State	30,445	11,073	13,183	6,189	36.4	43.3	20.3
Northern California	2,588	1,440	794	354	55.6	30.7	13.7
Coast counties	1,330	745	347	238	56.0	26.1	17.9
Interior counties	1,258	695	447	116	55.3	35.5	9.2
Central California	16,242	7,430	5,015	3,797	45.7	30.9	23.4
San Francisco	5,332	2,314	1,324	1,694	43.4	24.8	31.8
Other bay counties	4,168	2,010	1,288	870	48.2	30.9	20.9
Coast counties	1,888	965	538	365	52.2	28.5	19.3
Interior counties	4,854	2,121	1,865	868	43.7	38.4	17.9
Southern California	11,615	2,203	7,374	2,038	19.0	63.5	17.5
Los Angeles	7,211	1,251	4,618	1,342	17.4	64.0	18.6
Other counties	4,404	952	2,756	696	21.6	62.6	15.8
Northern and Central California	18,830	8,870	5,800	4,151	47.1	30.9	22.0
Coast counties	12,718	6,064	3,497	3,167	47.6	27.5	24.9
Interior counties	6,112	2,816	2,312	984	46.1	37.8	16.1
Metropolitan area	9,700	4,324	2,612	2,364	45.5	27.5	27.0
Rural counties	9,330	4,546	3,197	1,587	48.7	34.3	17.0

It appears from this table that of 30,011 white brides in 1915 and 30,445 in 1914, those born in California were 10,809 and 11,073; those born in other states were 13,628 and 13,183; and the foreign born were 5,574 and 6,189. The per cents born in California were, respectively, 36.0 and 36.4; in other states, 45.4 and 43.3; and abroad, 18.6 and 20.3. It may be added that for 1906 to 1915 the annual average per cents were as follows: California, 38.8; other states, 41.7; and foreign, 19.5. It may be noted, also, that native daughters outnumbered brides born in other states in 1906 to 1909, but that for the six years, 1910 to 1915, other American brides have surpassed native Californians.

The proportion of native daughters among the brides is very high indeed for northern, as well as central, California, but very low indeed

for southern California with less than one-fifth of the brides born in this state. The per cents born in California were even less for Los Angeles than for the other counties of southern California. North of Tehachapi, likewise, the per cents were less for the metropolitan area than for the rural counties, and also less for San Francisco than for the other bay counties.

The proportion of brides born elsewhere in the United States than California is very high indeed (about two-thirds), for the counties south of Tehachapi, but is quite low for both northern and central California. The per cents for brides born in other states were somewhat greater in 1915 and 1914 for Los Angeles than for the other counties south of Tehachapi. The per cents born in other states were much less for the metropolitan area than for the rural counties north of Tehachapi and were likewise less for San Francisco than for the group of suburban counties.

The proportion of foreign born brides is notably high only for central California, especially in San Francisco and its suburbs. The per cents foreign born in 1915 and 1914 were as great as 27.6 and 31.8 for San Francisco, as compared with 19.4 and 20.9 for the other counties on the bay. Similarly, the per cents for foreign born brides were greater for Los Angeles each year than for the other counties south of Tehachapi.

Inspection of Table 15, *post*, shows that one-half or more of the white brides in both 1915 and 1914 were native daughters, the per cent being far above 50.0 in most cases, in the following thirty counties: Alpine, Amador, Calaveras, Colusa, El Dorado, Glenn, Humboldt, Lake, Lassen, Marin, Mariposa, Mendocino, Modoc, Mono, Monterey, Napa, Nevada, Plumas, San Benito, San Joaquin, San Luis Obispo, Shasta, Sierra, Solano, Sonoma, Sutter, Trinity, Tuolumne, Yolo and Yuba. The per cent was also over 50.0 for Santa Cruz and Tehama in 1915 alone, as well as for Placer, Sacramento and San Mateo in 1914 only.

In contrast with the long list of counties, all north of Tehachapi, with half the brides born in California, the counties with at least this proportion of white brides born in other states include only Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Tulare, in both 1915 and 1914, all of these few counties being in or near southern California.

Moreover, at least one-fourth (25.0 per cent) of the white brides were foreign born only in Amador, besides San Francisco, for both 1915 and 1914, though at least 25.0 per cent of the brides were born abroad also in Alpine and Kings for 1915 alone, and in Humboldt and Mono for 1914 alone. The per cents for Alpine and Mono are negligible, however, on account of the small numbers involved, the proportion of brides born abroad being really highest each year for San Francisco.

Nativity of White Brides (by Status).—Table 8, below, shows for the several geographic divisions in 1915 and 1914, the nativity (as born in California, born in other states, or foreign born) of white brides classified by civil status or marital condition—as single, widowed or divorced. For convenience in presentation, only the per cent distributions are given here, though the absolute numbers appear in Tables 13 and 14, *post*.

TABLE 8.—Per Cent Distribution, by Nativity, of White Brides, Classified by Marital Condition, for Geographic Divisions: 1915 and 1914.

Geographic division	White brides								
	Per cent born in California among the—			Per cent born in other states among the—			Per cent foreign born among the—		
	Single	Wid-owed	Di-vorced	Single	Wid-owed	Di-vorced	Single	Wid-owed	Di-vorced
1915.									
The State	39.0	19.3	30.8	42.6	54.2	56.4	18.4	26.5	12.8
Northern California	62.0	35.8	45.3	26.1	40.7	42.1	11.9	23.5	12.6
Coast counties	63.5	31.0	47.3	20.9	38.8	30.0	15.6	30.2	13.7
Interior counties	60.5	40.9	43.2	31.3	42.9	45.4	8.2	16.2	11.4
Central California	48.1	25.6	39.1	30.7	45.6	46.5	21.2	28.8	14.4
San Francisco	44.4	23.3	37.5	26.5	45.4	45.5	29.1	31.3	17.0
Other bay counties	51.3	28.5	38.8	29.6	42.4	47.2	19.1	29.1	14.0
Coast counties	56.9	22.8	45.2	28.0	53.4	43.2	15.1	24.3	11.6
Interior counties	46.7	26.8	30.5	37.8	46.2	48.4	15.5	27.0	12.1
Southern California	20.7	8.8	14.8	63.4	67.1	74.8	15.9	24.1	10.4
Los Angeles	18.2	7.3	13.4	65.2	65.0	74.7	16.6	27.7	11.9
Other counties	24.7	11.0	16.4	60.6	69.9	74.9	14.7	19.1	8.7
Northern and Central California ..	49.9	26.8	39.9	30.1	45.0	45.9	20.0	28.2	14.2
Coast counties	50.1	25.6	39.7	27.1	44.8	45.2	22.8	29.6	15.1
Interior counties	49.6	29.5	40.3	36.4	45.5	47.8	14.0	25.0	11.9
Metropolitan area	47.3	25.5	38.0	27.7	44.2	46.2	25.0	30.3	15.8
Rural counties	58.0	23.4	42.3	32.6	46.0	45.6	14.4	25.6	12.1
1914.									
The State	39.3	20.7	29.7	40.1	53.0	57.0	20.6	26.3	13.3
Northern California	58.8	39.3	46.2	27.6	38.4	46.2	13.6	22.3	7.6
Coast counties	59.3	40.5	46.6	22.5	35.1	43.8	18.2	24.4	9.6
Interior counties	58.3	37.6	45.8	32.9	43.0	48.4	8.8	19.4	5.8
Central California	48.9	23.7	38.0	27.5	41.6	45.5	23.6	29.7	16.5
San Francisco	46.2	29.5	34.1	21.1	36.1	43.0	32.7	34.4	22.9
Other bay counties	51.5	29.9	42.7	27.5	42.1	42.2	21.0	23.0	15.1
Coast counties	56.8	26.0	38.8	25.0	40.3	45.3	18.2	33.7	15.9
Interior counties	46.7	27.8	37.1	35.5	46.8	52.2	17.8	25.4	10.7
Southern California	21.3	8.0	12.8	60.9	69.0	77.4	17.8	23.0	9.8
Los Angeles	19.3	8.1	11.2	61.7	67.9	79.6	19.0	24.0	9.2
Other counties	24.8	7.9	15.0	59.5	70.7	74.4	15.7	21.4	10.6
Northern and Central California ..	50.3	30.0	39.1	27.5	41.3	45.6	22.2	28.7	15.3
Coast counties	50.8	30.4	39.1	23.9	38.7	43.1	25.3	30.9	17.8
Interior counties	49.1	29.3	39.1	34.9	46.2	51.3	16.0	24.5	9.6
Metropolitan area	48.4	29.7	38.3	23.9	38.9	42.6	27.7	31.4	19.1
Rural counties	52.1	30.8	40.1	31.1	43.5	49.0	16.8	26.2	10.9

Analysis of the per cents for the state in Table 8, as well as for Table 7, preceding it, is facilitated by the annual averages for 1906 to 1915, presented in the following tabular statement:

Marital condition	Annual average per cent of white brides: 1906 to 1915			
	Total	Born in California	Born in other states	Foreign born
State totals -----	100.0	38.8	41.7	19.5
Single -----	100.0	41.6	38.9	19.5
Widowed -----	100.0	22.3	51.5	26.2
Divorced -----	100.0	32.1	54.8	13.1

It appears from Table 8 that in 1915 and 1914, respectively, the per cents born in California among spinster brides were 39.0 and 39.3, against the average of 41.6 shown in the tabular statement; among the divorced were 30.8 and 29.7 against the average of 32.1; and among the widowed were only 19.3 and 20.7 against the average of 22.3. Throughout California both years the native daughters formed a very large part of the single brides and a large proportion of the divorced, but only a small proportion of the widowed brides.

The per cents born in the Golden State among the single, widowed, and divorced brides were very much less for southern California each year than for northern or central California. Generally speaking, the per cents born in California were also less for Los Angeles in all cases than for the other counties south of Tehachapi, the only exception being for widowed brides in 1914. Without exception, the per cents born in this state were likewise less for the metropolitan area than for the rural counties north of Tehachapi. Likewise, without any exception whatever, the rule is also that within the metropolitan area the proportion of native daughters among each class of brides is less for the metropolis proper than for the surrounding suburbs.

In 1915 and 1914, respectively, the per cents born in other states than California among divorcees remarrying were 56.4 and 57.0 against the average for 1906 to 1915 of 54.8; among widows were 54.2 and 53.0 against the average of 51.5; and among spinster brides were 42.6 and 40.1 against the average of 38.9. Except for one minor geographic division in 1915 alone, a larger proportion each year of the divorcees than of the widows remarrying were born elsewhere in the United States than California. In Los Angeles the per cents born in other states were no less than 74.7 and 79.6 among the divorced brides in 1915 and 1914 and 65.0 and 67.9 among the widowed; for the other counties south of Tehachapi the per cents for divorcees were as great as 74.9 and 74.4, and for widows were 69.9 and 70.7.

The per cents born in other states among single, widowed, and divorced brides were much greater each year for southern California than for northern or central California. North of Tehachapi the per cents born in other states were less among brides of each class in the metropolitan area than in the rural counties, except only as to the divorced in 1915 alone. The per cents were also less for San Francisco than for the other bay counties in all cases except the widowed in 1915,

and the divorced in 1914. The per cents born elsewhere in the United States were greater, generally speaking, for Los Angeles than for the rest of southern California.

The per cents foreign born in 1915 and 1914, respectively, among the widowed were 26.5 and 26.3 as compared with the average for the last ten years of 26.2; among the single were 18.4 and 20.6 as compared with the average of 19.5; and among the divorced were only 12.8 and 13.3 as compared with the average of 13.1. Except only for the interior counties of northern California in 1915 alone, the per cent of foreign born brides was highest in every instance each year among the widowed, next highest among the single, and lowest of all among the divorced.

Without exception, the per cents foreign born were higher in all cases for San Francisco than for the other bay counties and were likewise higher among all classes each year for the metropolitan area than for the rural counties north of Tehachapi. Except as to divorcees in 1914 alone, the per cent foreign born was also higher among all classes of brides in Los Angeles than in the rest of southern California.

Summary.—Of all the single brides in 1915 and 1914, the per cents born in California were 39.0 and 39.3; the per cents born in other states were 42.6 and 40.1; and the per cents foreign born were 18.4 and 20.6. It may be noted that the per cent for native Californians exceeded that for other Americans each year from 1906 to 1912, inclusive, but that in the three years, 1913 to 1915, the proportion of spinster brides here was greater for those born in other states than for native daughters of the Golden West. Hence, the annual average per cents for 1906 to 1915, in contrast with the order of per cents for the most recent years, are as follows: California, 41.6; other states, 38.9; and foreign, 19.5. That is, California girls and other American maids each form about two-fifths of the spinster brides in this state, while only about one-fifth of the first marriage brides here were born abroad.

Of the widows remarrying in 1915 and 1914, the per cents born elsewhere in the United States than California were 54.2 and 53.0; the per cents foreign born were 26.5 and 26.3; and the per cents born in California were 19.3 and 20.7. Moreover, the annual average per cents for the ten years last past were: Other states, 51.5; foreign countries, 26.2; and California, 22.3. As compared with the per cent distributions of all white brides taken together the per cents for widows remarrying are very high indeed for those born outside California, whether in other states or foreign countries, while the per cents are relatively very low for widows among brides who were born in the Golden State.

Of all the divorcees marrying again in 1915 and 1914, the per cents born in other states were as great as 56.4 and 57.0; the per cents born in California were 30.8 and 29.7; and the per cents foreign born were only 12.8 and 13.3. Furthermore, the annual average per cents for 1906 to 1915 were: Other American, 54.8; Californian, 32.1; and foreign, only 13.1. In short, American women born in other states comprise the great bulk of the divorced brides in California, and while the native daughters form a considerable proportion of the divorcees remarrying, the foreign born constitute a very small proportion indeed.

The first marriage brides in this state are mainly California girls, or

other American maids, for the simple reason that most of the marriageable young women here were born in this or other states and reared in the glorious California climate. However, the great bulk of the widows remarrying here were born outside California, and only a comparatively small proportion were born within the Golden State, on account of the fact the very few women born in California are old enough to have been married and become widows, so that most of the widowed brides here must necessarily have come from other states or foreign countries. There is indeed a very great disparity between the proportions for the American born and the foreign born among divorcees marrying again in California, which seems due to differences between the native and foreign elements of the white population with respect to divorce or remarriage through religious or other influences.

TABLE 9.—Marriages Classified by Number in Order and

County	Total marriages	Number of marriages				Groom			
		First of both parties	First of groom only	First of bride only	Second or over of both	Single	Widowed	Divorced	Single
California	31,451	21,998	3,878	2,617	2,968	25,571	2,716	2,864	24,610
Alameda	2,864	2,008	340	256	260	2,348	259	257	2,364
Alpine	2		1		1	1		1	
Amador	35	25	4	4	2	29	3	3	29
Butte	216	165	20	12	19	185	16	15	177
Calaveras	33	28	4		1	32		1	28
Colusa	40	30	5	2	3	35	2	3	32
Contra Costa	260	191	30	23	25	221	18	30	214
Del Norte	36	27	5	1	3	32	1	3	28
El Dorado	37	29	5	2	1	34	1	2	31
Fresno	895	653	84	65	93	737	94	64	718
Glenn	52	48	3		1	51		1	48
Humboldt	305	223	44	21	14	270	17	18	247
Imperial	216	155	25	16	20	180	19	17	171
Inyo	37	19	6	4	8	25	4	8	23
Kern	444	317	65	23	39	382	31	31	340
Kings	210	164	21	8	17	185	11	14	173
Lake	28	20	3	3	2	23	2	3	23
Lassen	59	52	4	2	1	56		3	54
Los Angeles	6,981	4,793	778	675	735	5,571	770	640	5,468
Madera	93	63	12	7	11	75	8	10	70
Marin	657	391	117	66	83	508	71	78	437
Mariposa	17	12	2	2	1	14	1	2	14
Mendocino	167	131	15	14	7	146	14	7	145
Merced	139	113	10	6	10	123	12	4	119
Modoc	61	50	9	2	3	59	4	1	52
Mono	3	2	1			3			2
Monterey	177	125	22	12	18	147	13	17	137
Napa	230	152	30	20	28	182	29	19	172
Nevada	97	74	11	4	8	85	7	5	78
Orange	1,401	905	196	114	186	1,101	124	176	1,019
Placer	89	58	9	11	11	67	11	11	60
Plumas	36	26	6	2	2	32		4	28
Riverside	482	346	36	55	45	382	52	48	401
Sacramento	915	640	138	71	87	787	68	90	729
San Benito	63	43	9	6	5	52	4	7	49
San Bernardino	726	490	103	54	79	593	70	63	544
San Diego	1,353	828	203	141	181	1,031	158	161	900
San Francisco	6,817	4,907	876	526	508	5,783	430	604	5,433
San Joaquin	794	571	99	48	76	670	58	66	619
San Luis Obispo	193	143	23	13	14	166	15	12	156
San Mateo	362	223	56	41	42	279	28	55	251
Santa Barbara	283	206	31	21	25	237	22	24	227
Santa Clara	956	673	108	83	92	781	80	96	756
Santa Cruz	276	188	31	27	30	219	23	34	215
Shasta	120	84	16	10	10	100	14	6	94
Sierra	12	10			2	10	2		10
Siskiyou	177	124	29	10	14	153	11	13	131
Solano	232	159	37	19	17	196	18	18	178
Sonoma	482	316	61	30	45	407	36	39	376
Stanislaus	259	204	19	22	14	223	22	14	226
Sutter	43	32	5	4	2	37	4	2	36
Tehama	107	77	15	9	6	92	5	10	86
Trinity	21	16	2		3	18	2	1	16
Tulare	345	284	30	12	19	314	17	14	296
Tuolumne	59	41	10	5	3	51	8	5	46
Ventura	184	131	22	18	13	153	18	13	149
Yolo	115	86	11	7	11	97	4	14	93
Yuba	116	80	21	8	7	101	10	5	88

Marital Condition of Parties, with Per Cents, for Counties: 1915.

Bride		Per cent of marriages				Per cent of grooms			Per cent of brides		
Wid- owed	Di- vorced	First of both parties	First of groom only	First of bride only	Second or over of both	Single	Wid- owed	Di- vorced	Single	Wid- owed	Di- vorced
3,159	3,682	69.9	12.4	8.3	9.4	82.3	8.6	9.1	78.2	10.1	11.7
278	322	70.1	11.9	8.9	9.1	82.0	9.0	9.0	79.0	9.7	11.3
2	2	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	100.0
8	3	71.5	11.4	11.4	5.7	82.8	8.6	8.6	82.8	8.6	8.6
18	26	76.4	9.3	5.5	8.8	85.7	7.4	6.9	82.0	6.0	12.0
2	3	84.9	12.1	-----	3.0	97.0	-----	3.0	84.8	6.1	9.1
5	3	75.0	12.5	5.0	7.5	87.5	5.0	7.5	80.0	12.5	7.5
18	37	71.0	11.2	8.5	9.3	82.2	6.7	11.1	79.6	6.7	13.7
3	5	75.0	13.9	2.8	8.3	88.9	2.8	8.3	77.8	8.3	13.9
2	4	78.4	13.5	5.4	2.7	91.9	2.7	5.4	83.8	5.4	10.8
96	79	72.9	9.4	7.3	10.4	82.3	10.5	7.2	80.2	11.0	8.8
1	3	92.3	5.8	-----	1.9	98.1	-----	1.9	92.3	1.9	5.8
26	32	74.1	14.4	6.9	4.6	88.5	5.6	5.9	81.0	8.5	10.5
19	26	71.8	11.6	7.4	9.2	83.3	8.8	7.9	79.2	8.8	12.0
8	6	51.4	16.2	10.8	21.6	67.6	10.8	21.6	62.2	21.6	16.2
35	69	71.4	14.6	5.2	8.8	86.0	7.0	7.0	76.6	7.9	15.5
23	15	78.1	10.0	3.8	8.1	88.1	5.2	6.7	81.9	11.0	7.1
-----	5	71.4	10.7	10.7	7.2	82.1	7.2	10.7	82.1	-----	17.9
2	3	88.1	6.8	8.4	1.7	94.9	-----	5.1	91.5	8.4	5.1
786	728	68.7	11.1	9.7	10.5	79.8	11.0	9.2	78.3	11.3	10.4
11	12	67.8	12.9	7.5	11.8	80.6	8.6	10.8	75.3	11.8	12.9
86	114	59.5	17.8	10.1	12.6	77.3	10.8	11.9	69.6	13.1	17.3
1	2	70.5	11.8	11.8	5.9	82.3	5.9	11.8	82.3	5.9	11.8
10	12	78.4	9.0	8.4	4.2	87.4	8.4	4.2	86.8	6.0	7.2
12	8	81.3	7.2	4.8	7.2	88.5	8.6	2.0	85.6	8.6	5.8
4	8	78.1	14.1	3.1	4.7	92.2	6.2	1.6	81.3	6.2	12.5
-----	1	66.7	83.3	-----	-----	100.0	-----	-----	66.7	-----	33.3
19	21	70.6	12.4	6.8	10.2	83.1	7.3	9.6	77.4	10.7	11.9
26	32	66.1	13.0	8.7	12.2	79.1	12.6	8.8	74.8	11.3	13.9
11	8	76.3	11.3	4.1	8.3	87.6	7.2	5.2	80.4	11.3	8.3
192	190	64.6	14.0	8.1	13.3	78.6	8.8	12.6	72.7	13.7	13.6
11	9	65.2	10.1	12.4	12.3	75.3	12.4	12.3	77.5	12.4	10.1
3	5	72.2	16.7	5.6	5.5	88.9	-----	11.1	77.8	8.3	13.9
39	42	71.8	7.5	11.4	9.3	79.2	10.8	10.0	83.2	8.1	8.7
96	129	68.7	14.6	7.5	9.2	83.3	7.2	9.5	76.2	10.2	13.6
8	6	68.3	14.3	9.5	7.9	82.5	6.4	11.1	77.8	12.7	9.5
86	96	67.5	14.2	7.4	10.9	81.7	9.6	8.7	74.9	11.9	13.2
158	226	61.2	15.0	10.4	13.4	76.2	11.7	12.1	71.6	11.7	16.7
583	801	72.0	12.8	7.7	7.5	84.8	6.3	8.9	79.7	8.6	11.7
98	82	71.9	12.5	6.0	9.6	81.4	7.3	8.3	78.0	11.7	10.3
13	24	74.1	11.9	6.7	7.3	86.0	7.8	6.2	80.9	6.7	12.4
32	66	61.6	15.5	11.3	11.6	77.1	7.7	15.2	72.9	8.9	18.2
24	32	72.8	11.0	7.4	8.8	83.7	7.8	8.5	80.2	8.5	11.3
84	116	70.4	11.3	8.7	9.6	81.7	8.4	9.9	79.1	8.8	12.1
27	34	68.1	11.2	9.8	10.9	79.4	8.3	12.3	77.9	9.8	12.3
15	11	70.0	13.4	8.3	8.3	83.3	11.7	5.0	78.3	12.5	9.2
2	-----	88.3	-----	-----	16.7	83.3	16.7	-----	83.3	16.7	-----
10	27	70.1	16.4	5.6	7.9	86.5	6.2	7.3	75.7	9.0	15.3
26	28	68.5	16.0	8.2	7.3	81.5	7.8	7.7	76.7	11.2	12.1
48	58	71.8	12.7	6.2	9.3	84.4	7.5	8.1	78.0	10.0	12.0
15	18	78.8	7.3	8.5	5.4	86.1	8.5	5.4	87.3	5.8	6.9
3	4	74.4	11.6	9.3	4.7	86.0	9.3	4.7	83.7	7.0	9.3
10	11	72.0	11.0	8.4	5.6	86.0	4.7	9.3	80.4	9.3	10.3
3	2	76.2	9.5	-----	11.3	85.7	9.5	4.8	76.2	14.3	9.5
25	21	82.3	8.7	3.5	5.5	91.0	4.9	4.1	85.8	7.2	7.0
5	8	69.5	16.9	8.5	5.1	85.4	5.1	8.5	78.0	8.5	13.5
26	9	71.2	11.9	9.8	7.1	83.1	9.8	7.1	81.0	14.1	4.9
3	19	74.8	9.6	6.1	9.5	81.3	3.5	12.2	80.9	2.6	16.5
12	16	69.0	18.1	6.9	6.0	87.1	8.6	4.3	75.9	10.3	13.8

TABLE 10.—Marriages Classified by Number in Order and

County	Total mar- riages	Number of marriage					Groom		
		First of both parties	First of groom only	First of bride only	Second or over of both	Single	Wid- owed	Di- vorced	Single
California	31,902	22,747	3,770	2,514	2,871	26,517	2,710	2,675	21,261
Alameda	2,883	2,088	349	226	270	2,387	221	275	2,264
Alpine	1	1				1			1
Amador	50	40	3	5	2	43	4	3	45
Butte	235	171	28	15	21	199	17	19	166
Calaveras	31	24	4	1	2	28	1	2	25
Colusa	51	33	5	7	6	38	5	8	40
Contra Costa	270	186	23	30	31	209	28	33	216
Del Norte	25	23	1	1		24	1		24
El Dorado	33	24	4	3	2	28	4	1	27
Fresno	986	719	106	66	98	825	100	61	787
Glenn	77	53	13	8	3	66	3	8	61
Humboldt	327	252	41	15	19	293	25	9	267
Imperial	256	196	34	13	13	230	10	16	200
Inyo	47	31	9	5	2	40	5	2	36
Kern	437	316	63	22	36	379	31	27	328
Kings	207	154	27	12	14	181	9	17	166
Lake	44	32	6	1	5	38	3	3	33
Lassen	62	46	7	6	3	53	5	4	52
Los Angeles	7,441	5,226	788	681	743	6,014	746	679	5,910
Madera	84	55	13	8	8	68	6	10	63
Marin	730	450	143	57	80	593	57	80	507
Mariposa	14	12	2			14			12
Mendocino	216	146	35	20	15	181	15	20	166
Merced	148	120	12	8	8	132	8	8	124
Modoc	75	65	5	1	4	70	2	3	66
Mono	2	1	1			2			1
Monterey	195	140	26	17	12	166	10	19	157
Napa	198	128	20	23	27	148	28	22	151
Nevada	82	67	8	4	3	75	4	3	71
Orange	1,355	835	215	119	186	1,060	155	150	964
Placer	86	61	10	6	9	71	8	7	67
Plumas	30	23	5		2	28	1	1	26
Riverside	402	282	41	41	38	323	42	37	323
Sacramento	1,164	779	179	88	118	958	83	123	867
San Benito	76	57	6	9	4	63	7	6	66
San Bernardino	749	536	91	57	65	627	75	47	568
San Diego	1,227	803	163	126	135	906	149	112	929
San Francisco	6,216	4,711	650	427	419	5,370	399	447	5,128
San Joaquin	715	508	96	47	64	604	51	60	553
San Luis Obispo	218	171	19	12	16	190	13	15	183
San Mateo	367	230	50	31	46	290	37	40	271
Santa Barbara	311	222	24	32	33	246	31	34	254
Santa Clara	1,142	810	134	98	100	944	107	91	906
Santa Cruz	272	194	31	20	27	225	29	18	214
Shasta	153	114	18	7	14	132	9	12	121
Sierra	13	10	1		2	11	2		10
Siskiyou	197	116	26	11	14	172	8	17	157
Solano	201	149	23	13	16	172	15	14	162
Sonoma	526	381	68	39	38	449	40	37	420
Stanislaus	268	208	16	22	22	221	22	22	220
Sutter	40	33	1	4	2	34	3	3	37
Tehama	104	70	17	6	11	87	8	9	76
Trinity	13	8	5			13			8
Tulare	382	307	35	17	23	342	25	15	324
Tuolumne	54	33	12	1	8	45	5	4	34
Ventura	193	143	21	9	20	164	20	9	152
Yolo	125	89	19	6	11	108	9	8	96
Yuba	96	75	9	6	6	84	7	5	81

Marital Condition of Parties, with Per Cents, for Counties: 1914.

Bride		Per cent of marriages				Per cent of grooms			Per cent of brides		
Wid- owed	Di- vorced	First of both parties	First of groom only	First of bride only	Second or over of both	Single	Wid- owed	Di- vorced	Single	Wid- owed	Di- vorced
3,179	3,402	71.3	11.8	7.9	9.0	83.1	8.5	8.4	79.2	10.0	10.8
277	342	70.7	12.1	7.8	9.4	82.8	7.7	9.5	78.5	9.6	11.9
		100.0				100.0			100.0		
4	1	80.0	6.0	10.0	4.0	86.0	8.0	6.0	90.0	8.0	2.0
24	25	72.8	11.9	6.4	8.9	84.7	7.2	8.1	79.2	10.2	10.6
3	3	77.4	12.9	3.2	6.5	90.3	3.2	6.5	80.6	9.7	9.7
3	8	61.7	9.8	13.7	11.8	74.5	9.8	15.7	78.4	5.9	15.7
26	28	68.9	8.5	11.1	11.5	77.4	10.4	12.2	80.0	9.6	10.4
1		92.0	4.0	4.0		96.0	4.0		96.0	4.0	
3	3	72.7	12.1	9.1	6.1	84.9	12.1	3.0	81.8	9.1	9.1
111	88	72.9	10.8	6.9	9.4	83.7	10.1	6.2	79.8	11.3	8.9
7	9	68.8	16.9	10.4	3.9	85.7	3.9	10.4	79.2	9.1	11.7
30	30	77.1	12.5	4.6	5.8	89.6	7.6	2.8	81.6	9.2	9.2
21	26	76.5	13.3	5.1	5.1	89.8	3.9	6.3	81.6	8.2	10.2
7	4	66.0	19.1	10.6	4.3	85.1	10.6	4.3	76.6	14.9	8.5
44	55	72.3	14.4	5.0	8.3	86.7	7.1	6.2	77.3	10.1	12.6
17	21	74.4	13.0	5.8	6.8	87.4	4.4	8.2	80.2	8.2	11.6
7	4	72.7	13.6	2.3	11.4	86.4	6.8	6.8	75.0	15.9	9.1
3	7	74.2	11.3	9.7	4.8	85.5	8.1	6.4	83.9	4.8	11.3
801	730	70.2	10.6	9.2	10.0	80.8	10.1	9.1	79.4	10.8	9.8
13	8	65.5	15.5	9.5	9.5	81.0	7.1	11.9	75.0	15.5	9.5
82	141	61.6	19.6	7.8	11.0	81.2	7.8	11.0	69.5	11.2	19.3
2		85.7	14.3			100.0			85.7	14.3	
23	27	67.6	16.2	9.3	6.9	83.8	6.9	9.3	76.9	10.6	12.5
9	11	81.1	8.1	5.4	5.4	89.2	5.4	5.4	86.5	6.1	7.4
5	4	86.7	6.7	1.3	5.3	93.3	2.7	4.0	88.0	6.7	5.3
	1	50.0	50.0			100.0			50.0		50.0
17	21	71.8	13.3	8.7	6.2	85.1	5.1	9.8	80.5	8.7	10.8
22	25	64.7	10.1	11.6	13.6	74.8	14.1	11.1	76.3	11.1	12.6
2	0	81.7	9.7	4.9	3.7	91.5	4.9	3.6	86.6	2.4	11.0
179	222	61.6	15.9	8.8	13.7	77.5	11.4	11.1	70.4	13.2	16.4
5	14	70.9	11.6	7.0	10.5	82.6	9.3	8.1	77.9	5.8	16.3
4	3	76.7	16.7		6.6	93.4	3.3	3.3	76.7	13.3	10.0
44	35	70.1	10.2	10.2	9.5	80.4	10.4	9.2	80.4	10.9	8.7
137	160	66.9	15.4	7.6	10.1	82.3	7.1	10.6	74.5	11.8	13.7
7	3	75.0	7.9	11.8	5.3	82.9	9.2	7.9	86.8	9.2	4.0
87	60	71.6	12.1	7.6	8.7	83.7	10.0	6.3	79.2	11.6	9.2
171	127	65.4	13.3	10.3	11.0	78.7	12.2	9.1	75.7	13.9	10.4
476	602	75.8	10.6	6.9	6.7	86.4	6.4	7.2	82.7	7.6	9.7
83	77	71.0	13.4	6.6	9.0	84.5	7.1	8.4	77.6	11.6	10.8
15	20	78.5	8.7	5.5	7.3	87.1	6.0	6.9	83.9	6.9	9.2
35	61	65.4	13.6	8.5	12.5	79.0	10.1	10.9	73.9	9.5	16.6
27	30	71.4	7.7	10.3	10.6	79.1	10.0	10.9	81.7	8.7	9.6
105	129	70.9	11.7	8.6	8.8	82.6	9.4	8.0	79.5	9.2	11.3
27	31	71.3	11.4	7.4	9.9	82.7	10.7	6.6	78.7	9.9	11.4
11	21	74.5	11.8	4.6	9.1	86.3	5.9	7.8	79.1	7.2	13.7
2	1	76.9	7.7		15.4	81.6	15.4		76.9	15.4	7.7
14	26	74.1	13.2	5.6	7.1	87.3	4.1	8.6	79.7	7.1	13.2
15	24	74.1	11.4	6.5	8.0	85.6	7.4	7.0	80.6	7.5	11.9
49	57	72.5	12.9	7.4	7.2	85.4	7.6	7.0	79.9	9.3	10.8
24	14	77.6	6.0	8.2	8.2	83.6	8.2	8.2	85.8	9.0	5.2
2	1	82.5	2.5	10.0	5.0	85.0	7.5	7.5	92.5	5.0	2.5
12	16	67.3	16.3	5.8	10.6	83.6	7.7	8.7	73.1	11.5	15.4
1	4	61.5	38.5			100.0			61.5	7.7	30.8
29	29	80.4	9.2	4.4	6.0	89.5	6.6	3.9	84.8	7.6	7.6
13	7	61.1	22.2	1.9	14.8	83.3	9.3	7.1	62.9	24.1	13.0
23	18	74.1	10.9	4.7	10.3	85.0	10.3	4.7	78.8	11.9	9.3
15	15	71.2	15.2	4.8	8.8	86.4	7.2	6.4	76.0	12.0	12.0
3	12	78.1	9.4	6.3	6.2	87.5	7.3	5.2	84.4	3.1	12.5

TABLE 11.—Brides Classified by Race, Nativity, and Marital Condition, with Per Cent Distribution by Marital Condition, for Geographic Divisions: 1915.

Geographic division, and race or nativity of bride	Brides				Per cent		
	Total	Single	Widowed	Divorced	Single	Widowed	Divorced
The State -----	31,451	24,610	3,150	3,682	78.2	10.1	11.7
White -----	30,011	23,341	3,051	3,619	77.8	10.2	12.0
Born in California -----	10,800	9,107	589	1,113	84.3	5.4	10.3
Born in other states -----	13,023	9,982	1,655	2,041	72.9	12.1	15.0
Foreign born -----	5,574	4,302	807	465	77.2	14.5	8.3
Non-Caucasian -----	1,440	1,269	108	63	88.1	7.5	4.4
Northern California -----	2,497	1,993	224	280	79.8	9.0	11.2
White -----	2,444	1,945	221	278	79.6	9.0	11.4
Born in California -----	1,411	1,206	79	196	85.5	5.6	8.9
Born in other states -----	715	508	90	117	71.0	12.6	16.4
Foreign born -----	318	231	52	35	72.6	16.4	11.0
Non-Caucasian -----	53	48	3	2	90.6	5.6	3.8
Coast counties -----	1,269	1,007	116	146	79.4	9.1	11.5
White -----	1,237	975	116	146	78.8	9.4	11.8
Born in California -----	724	619	36	69	85.5	5.0	9.5
Born in other states -----	306	204	45	57	68.7	14.7	16.6
Foreign born -----	207	152	35	20	73.4	16.9	9.7
Non-Caucasian -----	32	32			100.0		
Interior counties -----	1,228	986	108	134	80.3	8.8	10.9
White -----	1,207	970	105	132	80.4	8.7	10.9
Born in California -----	687	587	43	57	85.4	6.3	8.3
Born in other states -----	409	304	45	60	74.3	11.0	14.7
Foreign born -----	111	79	17	15	71.2	15.3	13.5
Non-Caucasian -----	21	16	3	2	76.2	14.3	9.5
Central California -----	17,828	13,660	1,606	2,063	78.9	9.3	11.8
White -----	16,234	12,652	1,554	2,028	77.9	9.6	12.5
Born in California -----	7,277	6,087	397	793	83.6	5.5	10.9
Born in other states -----	5,533	3,882	709	942	70.2	12.8	17.0
Foreign born -----	3,424	2,683	448	298	78.3	13.1	8.6
Non-Caucasian -----	1,034	1,017	52	25	98.0	4.7	2.3
San Francisco -----	6,817	5,423	563	801	79.7	8.6	11.7
White -----	5,889	4,534	566	789	77.0	9.6	13.4
Born in California -----	2,443	2,015	132	296	82.5	5.4	12.1
Born in other states -----	1,618	1,202	257	359	66.1	14.1	19.8
Foreign born -----	1,628	1,317	177	134	80.9	10.9	8.2
Non-Caucasian -----	928	890	17	12	96.9	1.8	1.3
Other bay counties -----	4,152	3,199	414	539	77.0	10.0	13.0
White -----	4,076	3,146	396	534	77.2	9.7	13.1
Born in California -----	1,935	1,615	113	207	83.5	5.8	10.7
Born in other states -----	1,350	930	168	252	68.9	12.4	18.7
Foreign born -----	791	601	115	75	76.0	14.5	9.5
Non-Caucasian -----	76	53	18	5	69.7	23.7	6.6
Coast counties -----	1,665	1,313	151	201	78.8	9.1	12.1
White -----	1,634	1,307	148	199	79.0	9.0	12.0
Born in California -----	867	744	33	90	85.8	3.3	10.4
Born in other states -----	531	336	79	86	68.9	14.9	16.2
Foreign born -----	256	197	36	23	76.9	14.1	9.0
Non-Caucasian -----	11	6	3	2	54.5	27.3	18.2
Interior counties -----	4,694	3,724	458	512	79.3	9.8	10.9
White -----	4,615	3,665	444	506	79.4	9.6	11.0
Born in California -----	2,082	1,713	119	200	84.3	5.9	9.8
Born in other states -----	1,834	1,384	205	245	75.5	11.3	13.3
Foreign born -----	749	568	120	61	75.8	16.0	8.2
Non-Caucasian -----	79	59	14	6	74.7	17.7	7.6

TABLE 11.—Brides Classified by Race, Nativity, and Marital Condition, with Per Cent Distribution by Marital Condition, for Geographic Division: 1915—Concluded.

Geographic division, and race or nativity of bride	Brides				Per cent		
	Total	Single	Widowed	Divorced	Single	Widowed	Divorced
Southern California	11,626	8,948	1,329	1,349	77.0	11.4	11.6
White	11,333	8,744	1,276	1,313	77.2	11.2	11.6
Born in California	2,121	1,814	113	194	85.5	5.3	9.2
Born in other states	7,320	5,542	856	922	75.1	11.6	13.3
Foreign born	1,832	1,388	307	137	75.8	16.7	7.5
Non-Caucasian	293	204	53	36	69.6	18.1	12.3
Los Angeles	6,981	5,408	785	728	78.3	11.3	10.4
White	6,777	5,332	741	704	78.7	10.9	10.4
Born in California	1,119	971	54	94	86.8	4.8	8.4
Born in other states	4,483	3,475	482	526	77.5	10.8	11.7
Foreign born	1,175	886	205	84	75.4	17.4	7.2
Non-Caucasian	204	136	44	24	66.7	21.6	11.7
Other counties	4,645	3,480	544	621	74.9	11.7	13.4
White	4,566	3,412	535	609	74.9	11.7	13.4
Born in California	1,002	848	59	100	84.1	5.9	10.0
Born in other states	2,897	2,067	374	456	71.4	12.9	15.7
Foreign born	657	502	102	53	76.4	15.5	8.1
Non-Caucasian	89	68	9	12	76.4	10.1	13.5
Northern and Central California...	19,825	15,662	1,830	2,333	79.0	9.2	11.8
White	18,678	14,597	1,775	2,306	78.2	9.5	12.3
Born in California	8,688	7,298	476	919	83.9	5.5	10.6
Born in other states	6,248	4,390	799	1,069	70.3	12.8	16.9
Foreign born	3,742	2,914	500	328	77.9	13.3	8.8
Non-Caucasian	1,147	1,065	55	27	92.9	4.8	2.3
Coast counties	13,903	10,962	1,264	1,687	78.8	9.1	12.1
White	12,856	9,962	1,226	1,668	77.5	9.5	13.0
Born in California	5,909	4,993	314	602	83.6	5.3	11.1
Born in other states	4,006	2,702	549	754	67.5	13.7	18.8
Foreign born	2,882	2,267	363	252	78.7	12.6	8.7
Non-Caucasian	1,047	990	38	19	94.6	3.6	1.8
Interior counties	5,922	4,710	568	646	79.5	9.6	10.9
White	5,822	4,635	549	638	79.6	9.4	11.0
Born in California	2,719	2,300	162	257	84.6	6.0	9.4
Born in other states	2,243	1,688	250	305	75.3	11.1	13.6
Foreign born	860	647	137	76	75.3	15.9	8.8
Non-Caucasian	100	75	17	8	75.0	17.0	8.0
Metropolitan area	10,969	8,632	997	1,340	78.7	9.1	12.2
White	9,965	7,680	962	1,323	77.1	9.6	13.3
Born in California	4,378	3,630	245	503	82.9	5.6	11.5
Born in other states	3,168	2,132	425	611	67.3	13.4	19.3
Foreign born	2,419	1,918	292	200	79.3	12.1	8.6
Non-Caucasian	1,004	952	35	17	94.8	3.5	1.7
Rural counties	8,856	7,030	833	993	79.4	9.4	11.2
White	8,713	6,917	813	983	79.4	9.3	11.3
Born in California	4,310	3,663	231	416	85.0	5.4	9.6
Born in other states	3,060	2,258	374	448	73.3	12.1	14.6
Foreign born	1,323	996	208	119	75.3	15.7	9.0
Non-Caucasian	143	113	20	10	79.0	14.0	7.0

TABLE 12.—Brides Classified by Race, Nativity and Marital Condition, with Per Cent Distribution by Marital Condition, for Geographic Divisions: 1914.

Geographic division, and race or nativity of bride	Brides				Per cent		
	Total	Single	Widowed	Divorced	Single	Widowed	Divorced
The State	31,902	25,261	3,179	3,462	79.2	10.0	10.8
White	30,445	24,023	3,043	3,379	78.9	10.0	11.1
Born in California	11,073	9,439	631	1,003	85.2	5.7	9.1
Born in other states	13,183	9,644	1,612	1,927	73.2	12.2	14.6
Foreign born	6,189	4,940	800	449	79.8	12.9	7.3
Non-Caucasian	1,457	1,238	136	83	85.0	9.3	5.7
Northern California	2,650	2,117	230	303	79.9	8.7	11.4
White	2,588	2,063	224	301	79.7	8.7	11.6
Born in California	1,440	1,213	88	139	84.2	6.1	9.7
Born in other states	704	569	83	139	71.7	10.8	17.5
Foreign born	354	281	50	23	79.4	14.1	6.5
Non-Caucasian	62	54	6	2	87.1	9.7	3.2
Coast counties	1,347	1,069	133	147	79.2	9.9	10.9
White	1,330	1,053	131	146	79.2	9.8	11.0
Born in California	745	624	53	68	83.8	7.1	9.1
Born in other states	347	237	46	64	68.3	13.3	18.4
Foreign born	238	192	32	14	80.7	13.4	5.9
Non-Caucasian	19	16	2	1	84.2	10.5	5.3
Interior counties	1,301	1,048	97	156	80.5	7.5	12.0
White	1,278	1,010	93	155	80.3	7.4	12.3
Born in California	605	589	35	71	84.8	5.0	10.2
Born in other states	447	332	40	75	74.3	8.9	16.8
Foreign born	116	89	18	9	76.7	15.5	7.8
Non-Caucasian	43	38	4	1	88.4	9.3	2.3
Central California	17,318	13,820	1,596	1,902	79.8	9.2	11.0
White	16,242	12,845	1,534	1,863	79.1	9.4	11.5
Born in California	7,430	6,282	440	708	84.6	5.9	9.5
Born in other states	5,015	3,528	630	848	70.4	12.7	16.9
Foreign born	3,797	3,035	455	307	79.9	12.0	8.1
Non-Caucasian	1,076	975	62	39	90.6	5.8	3.6
San Francisco	6,216	5,138	476	602	82.7	7.6	9.7
White	5,332	4,282	457	593	80.3	8.6	11.1
Born in California	2,314	1,977	135	202	85.5	5.8	8.7
Born in other states	1,324	904	165	255	68.3	12.5	19.2
Foreign born	1,694	1,401	157	136	82.7	9.3	8.0
Non-Caucasian	884	836	19	9	96.8	2.2	1.0
Other bay counties	4,250	3,258	420	572	76.7	9.9	13.4
White	4,168	3,207	404	557	76.9	9.7	13.4
Born in California	2,010	1,651	121	238	82.2	6.0	11.6
Born in other states	1,288	883	170	235	68.6	13.2	18.2
Foreign born	870	673	113	84	77.4	13.0	9.6
Non-Caucasian	82	51	16	15	62.2	19.5	18.3
Coast counties	1,903	1,528	171	204	80.3	9.0	10.7
White	1,888	1,518	169	201	80.4	9.0	10.6
Born in California	865	803	44	78	87.6	4.5	7.9
Born in other states	538	379	68	91	70.5	12.6	16.9
Foreign born	365	276	57	32	75.6	15.6	8.8
Non-Caucasian	15	10	2	3	66.7	13.3	20.0
Interior counties	4,919	3,896	529	524	78.7	10.7	10.6
White	4,854	3,838	504	512	79.1	10.4	10.5
Born in California	2,121	1,791	140	190	84.4	6.6	9.0
Born in other states	1,865	1,362	236	267	73.0	12.7	14.3
Foreign born	868	685	128	55	78.9	14.8	6.3
Non-Caucasian	95	58	25	12	61.1	26.3	12.6

TABLE 12.—Brides Classified by Race, Nativity and Marital Condition, with Per Cent Distribution by Marital Condition, for Geographic Divisions: 1914—Concluded.

Geographic division, and race or nativity of bride	Brides				Per cent		
	Total	Single	Widowed	Divorced	Single	Widowed	Divorced
Southern California	11,934	9,324	1,353	1,257	78.2	11.3	10.5
White	11,615	9,115	1,285	1,215	78.4	11.1	10.5
Born in California	2,208	1,944	103	156	88.2	4.7	7.1
Born in other states	7,374	5,547	887	940	75.2	12.0	12.8
Foreign born	2,088	1,624	295	119	79.7	14.5	5.8
Non-Caucasian	319	209	68	42	65.5	21.3	13.2
Los Angeles	7,441	5,910	801	730	79.4	10.8	9.8
White	7,211	5,762	753	696	79.9	10.4	9.7
Born in California	1,251	1,112	61	78	88.9	4.9	6.2
Born in other states	4,618	3,553	511	554	76.9	11.1	12.0
Foreign born	1,342	1,097	181	64	81.7	13.5	4.8
Non-Caucasian	230	148	48	34	64.3	20.9	14.8
Other counties	4,493	3,414	552	527	76.0	12.3	11.7
White	4,404	3,353	532	519	76.1	12.1	11.8
Born in California	952	832	42	78	87.4	4.4	8.2
Born in other states	2,756	1,904	376	386	72.4	13.6	14.0
Foreign born	696	527	114	55	75.7	16.4	7.9
Non-Caucasian	89	61	20	8	68.5	22.5	9.0
Northern and Central California	19,968	15,037	1,826	2,205	79.8	9.2	11.0
White	18,830	14,908	1,758	2,164	79.2	9.3	11.5
Born in California	8,870	7,495	528	847	84.5	6.0	9.5
Born in other states	5,809	4,097	725	987	70.5	12.5	17.0
Foreign born	4,151	3,316	505	330	79.9	12.2	7.9
Non-Caucasian	1,138	1,029	68	41	90.4	6.0	3.6
Coast counties	13,718	10,993	1,200	1,525	80.1	8.8	11.1
White	12,718	10,060	1,161	1,497	79.1	9.1	11.8
Born in California	6,064	5,115	353	586	84.5	5.8	9.7
Born in other states	3,497	2,403	449	645	68.7	12.8	18.5
Foreign born	3,167	2,542	350	266	80.3	11.3	8.4
Non-Caucasian	1,000	933	39	28	93.3	3.9	2.8
Interior counties	6,250	4,944	626	680	79.1	10.0	10.9
White	6,112	4,848	597	667	79.3	9.8	10.9
Born in California	2,816	2,380	175	261	84.5	6.2	9.3
Born in other states	2,812	1,694	276	342	73.3	11.9	14.8
Foreign born	984	774	146	64	78.7	14.8	6.5
Non-Caucasian	138	96	29	13	69.6	21.0	9.4
Metropolitan area	10,466	8,396	896	1,174	80.2	8.6	11.2
White	9,500	7,489	861	1,150	78.8	9.1	12.1
Born in California	4,324	3,628	256	440	83.9	5.9	10.2
Born in other states	2,612	1,787	335	490	68.4	12.8	18.8
Foreign born	2,564	2,074	270	220	80.9	10.5	8.6
Non-Caucasian	966	907	35	24	93.9	3.6	2.5
Rural counties	9,502	7,541	930	1,031	79.4	9.8	10.8
White	9,330	7,419	897	1,014	79.5	9.6	10.9
Born in California	4,546	3,867	272	407	85.1	6.0	8.9
Born in other states	3,197	2,310	390	497	72.3	12.2	15.5
Foreign born	1,587	1,242	235	110	78.3	14.8	6.9
Non-Caucasian	172	122	33	17	70.9	19.2	9.9

TABLE 13.—White Brides Classified by Marital Condition and Nativity, with Per Cent Distribution by Nativity, for Geographic Divisions: 1915.

Geographic division, and marital condition of bride	White brides				Per cent		
	Total	Born in California	Born in other states	Foreign born	Born in California	Born in other states	Foreign born
The State	30,011	10,809	13,028	5,574	36.0	45.4	18.6
Single	23,341	9,107	9,982	4,302	39.0	42.6	18.4
Widowed	3,061	589	1,656	807	19.3	54.3	26.5
Divorced	3,619	1,113	2,041	465	30.8	56.4	12.8
Northern California	2,444	1,411	715	318	57.7	29.3	13.0
Single	1,945	1,206	508	231	62.0	26.1	11.9
Widowed	221	79	90	52	35.8	40.7	23.5
Divorced	278	126	117	35	45.3	42.1	12.6
Coast counties	1,237	724	306	207	58.5	24.8	16.7
Single	975	619	204	162	63.5	20.9	15.6
Widowed	116	36	45	35	31.0	38.8	30.2
Divorced	146	69	57	20	47.3	39.0	13.7
Interior counties	1,207	687	409	111	56.9	33.9	9.2
Single	970	587	304	79	60.5	31.3	8.2
Widowed	105	43	45	17	40.9	42.9	16.2
Divorced	132	57	60	15	43.2	45.4	11.4
Central California	16,234	7,277	5,533	3,424	44.8	34.1	21.1
Single	12,032	6,087	3,882	2,063	48.1	30.7	21.2
Widowed	1,564	397	709	443	25.6	45.6	28.8
Divorced	2,028	793	942	233	39.1	46.5	14.4
San Francisco	5,889	2,443	1,818	1,628	41.5	30.9	27.6
Single	4,534	2,015	1,302	1,317	44.4	26.5	29.1
Widowed	566	132	257	177	23.3	45.4	31.3
Divorced	789	296	359	134	37.5	45.5	17.0
Other bay counties	4,076	1,935	1,850	791	47.5	33.1	19.4
Single	3,146	1,615	980	601	51.3	29.6	19.1
Widowed	396	113	108	115	28.5	42.4	29.1
Divorced	534	207	222	75	38.8	47.2	14.0
Coast counties	1,654	867	531	256	52.4	32.1	15.5
Single	1,307	744	366	197	56.9	28.0	15.1
Widowed	148	33	79	36	22.3	58.4	24.3
Divorced	199	90	86	23	45.2	43.2	11.6
Interior counties	4,615	2,032	1,834	749	44.0	39.8	16.2
Single	3,665	1,713	1,384	568	46.7	37.8	15.5
Widowed	444	119	205	120	26.8	46.2	27.0
Divorced	506	200	245	61	39.5	48.4	12.1
Southern California	11,333	2,121	7,380	1,832	18.7	65.1	16.2
Single	8,744	1,814	5,542	1,388	20.7	63.4	15.9
Widowed	1,276	113	856	307	8.8	67.1	24.1
Divorced	1,313	194	982	137	14.8	74.8	10.4
Los Angeles	6,777	1,119	4,483	1,175	16.5	66.2	17.3
Single	5,332	971	3,475	896	18.2	65.2	16.6
Widowed	741	54	482	205	7.3	65.0	27.7
Divorced	704	94	526	84	13.4	74.7	11.9
Other counties	4,556	1,002	2,897	657	22.0	63.6	14.4
Single	3,412	843	2,067	502	24.7	60.6	14.7
Widowed	535	59	374	102	11.0	69.9	19.1
Divorced	609	100	456	53	16.4	74.9	8.7
Northern and Central California	18,678	8,688	6,248	3,742	46.5	33.5	20.0
Single	14,597	7,293	4,390	2,914	49.9	30.1	20.0
Widowed	1,775	476	799	500	26.8	45.0	28.2
Divorced	2,306	919	1,059	323	39.9	45.9	14.2
Coast counties	12,856	5,909	4,005	2,332	46.4	31.2	22.4
Single	9,462	4,993	2,702	2,367	50.1	27.1	22.8
Widowed	1,226	314	549	363	25.6	44.8	29.6
Divorced	1,068	602	754	252	39.7	45.2	15.1
Interior counties	5,822	2,719	2,243	890	46.7	38.5	14.8
Single	4,635	2,300	1,688	647	49.6	36.4	14.0
Widowed	549	162	250	137	29.5	45.5	25.0
Divorced	638	257	305	76	40.3	47.8	11.9
Metropolitan area	9,065	4,378	3,168	2,419	43.9	31.8	21.3
Single	7,680	3,630	2,132	1,918	47.3	27.7	25.0
Widowed	962	245	425	232	25.5	44.2	30.3
Divorced	1,323	503	611	209	38.0	46.2	15.8
Rural counties	8,713	4,310	3,080	1,323	49.5	35.3	15.2
Single	6,917	3,663	2,238	996	53.0	32.6	14.4
Widowed	813	231	374	208	28.4	46.0	25.6
Divorced	983	416	448	119	42.3	45.6	12.1

TABLE 14.—White Brides Classified by Marital Condition and Nativity, with Per Cent Distribution by Nativity, for Geographic Divisions: 1914.

Geographic division, and marital condition of bride	White brides				Per cent		
	Total	Born in California	Born in other states	Foreign born	Born in California	Born in other states	Foreign born
The State	30,445	11,073	13,186	6,189	36.4	43.3	20.3
Single	24,023	9,439	9,644	4,940	39.3	40.1	20.6
Widowed	3,043	631	1,612	800	20.7	53.0	25.3
Divorced	3,379	1,008	1,927	449	29.7	57.0	13.3
Northern California	2,588	1,440	794	354	55.6	30.7	13.7
Single	2,068	1,213	580	281	58.8	27.6	13.6
Widowed	224	88	86	50	39.3	38.4	22.3
Divorced	301	139	139	23	46.2	46.2	7.6
Coast counties	1,330	745	347	238	56.0	26.1	17.9
Single	1,063	624	287	192	59.3	22.5	18.2
Widowed	131	53	46	32	40.5	35.1	24.4
Divorced	146	68	64	14	46.6	43.8	9.6
Interior counties	1,258	695	447	116	55.3	35.5	9.2
Single	1,010	589	332	89	58.3	32.9	8.8
Widowed	93	35	40	18	37.6	43.0	19.4
Divorced	155	71	75	9	45.8	48.4	5.8
Central California	16,242	7,430	5,015	3,797	45.7	30.9	23.4
Single	12,845	6,232	3,523	3,035	48.9	27.5	23.6
Widowed	1,534	440	639	456	28.7	41.6	29.7
Divorced	1,863	708	848	307	38.0	45.5	16.5
San Francisco	5,332	2,314	1,324	1,094	43.4	24.8	31.8
Single	4,282	1,977	904	1,401	46.2	21.1	32.7
Widowed	457	135	165	157	29.5	36.1	34.4
Divorced	593	202	255	136	34.1	43.0	22.9
Other bay counties	4,168	2,010	1,238	870	48.2	30.9	20.9
Single	3,207	1,651	883	673	51.5	27.5	21.0
Widowed	404	121	170	113	29.9	42.1	28.0
Divorced	557	238	235	84	42.7	42.2	15.1
Coast counties	1,888	936	538	365	52.2	28.5	19.3
Single	1,518	863	379	276	56.8	25.0	18.2
Widowed	169	44	68	57	26.0	40.3	33.7
Divorced	201	78	91	32	38.8	45.3	15.9
Interior counties	4,854	2,121	1,865	868	43.7	38.4	17.9
Single	3,838	1,791	1,362	685	46.7	35.6	17.8
Widowed	504	140	236	123	27.8	46.8	25.4
Divorced	512	190	267	55	37.1	52.2	10.7
Southern California	11,615	2,203	7,374	2,038	19.0	63.5	17.5
Single	9,115	1,944	5,547	1,024	21.3	60.9	17.8
Widowed	1,285	103	887	295	8.0	69.0	23.0
Divorced	1,215	156	940	119	12.8	77.4	9.8
Los Angeles	7,211	1,251	4,618	1,342	17.4	64.0	18.6
Single	5,762	1,112	3,553	1,097	19.3	61.7	19.0
Widowed	753	61	511	181	8.1	67.9	21.0
Divorced	696	78	554	64	11.2	79.6	9.2
Other counties	4,404	952	2,756	696	21.6	62.6	15.8
Single	3,353	832	1,994	527	24.8	59.5	15.7
Widowed	532	42	376	114	7.9	70.7	21.4
Divorced	519	78	386	55	15.0	74.4	10.6
Northern and Central California	18,630	8,870	5,809	4,151	47.1	30.9	22.0
Single	14,908	7,495	4,097	3,316	50.3	27.5	22.2
Widowed	1,758	523	725	505	30.0	41.3	28.7
Divorced	2,164	847	987	330	39.1	45.6	15.3
Coast counties	12,718	6,054	3,497	3,167	47.6	27.5	24.9
Single	10,080	5,115	2,403	2,542	50.8	23.9	25.3
Widowed	1,161	353	449	359	30.4	38.7	30.9
Divorced	1,497	586	645	266	39.1	43.1	17.8
Interior counties	6,112	2,816	2,312	984	46.1	37.8	16.1
Single	4,848	2,390	1,694	774	49.1	34.9	16.0
Widowed	597	175	276	146	29.3	46.2	24.5
Divorced	667	261	342	64	39.1	51.3	9.6
Metropolitan area	9,500	4,324	2,612	2,564	45.5	27.5	27.0
Single	7,489	3,623	1,787	2,074	48.4	23.9	27.7
Widowed	861	256	335	270	29.7	38.9	31.4
Divorced	1,150	440	490	220	38.3	42.6	19.1
Rural counties	9,330	4,546	3,197	1,587	48.7	34.3	17.0
Single	7,419	3,867	2,310	1,242	52.1	31.1	16.8
Widowed	897	272	390	235	30.3	43.5	26.2
Divorced	1,014	407	497	110	40.1	49.0	10.9

TABLE 15.—Brides Classified by Race and Nativity, with Per Cent

County	Total brides, 1915						Total
	Total	White			Non-Caucasian		
		Total	Born in California	Born in other states		Foreign born	
California	31,451	30,011	10,809	18,028	5,574	1,440	31,902
Alameda	2,864	2,794	1,290	915	589	70	2,883
Alpine	2	2	1		1		1
Amador	35	35	19	7	9		50
Butte	216	216	105	94	17		235
Calaveras	33	33	25	5	3		31
Colusa	40	40	26	7	7		51
Contra Costa	269	266	132	81	53	3	270
Del Norte	38	27	11	13	3	9	25
El Dorado	37	36	26	9	1	1	33
Fresno	805	883	311	398	174	12	986
Glenn	52	52	27	20	5		77
Humboldt	305	297	168	56	73	8	227
Imperial	216	202	25	143	34	14	256
Inyo	37	33	16	16	1	4	47
Kern	444	435	126	257	52	9	437
Kings	210	204	91	56	57	6	207
Lake	28	24	17	7			44
Lassen	59	55	29	18	8	4	62
Los Angeles	6,981	6,777	1,119	4,483	1,175	204	7,441
Madera	93	92	35	37	20	1	84
Marin	657	656	336	232	88	1	730
Mariposa	17	14	11	3		3	14
Mendocino	167	161	108	28	25	6	216
Merced	139	139	61	48	30		148
Modoc	64	64	44	19	1		75
Mono	3	3	2	1			2
Monterey	177	174	115	45	14	3	195
Napa	230	230	141	57	32		196
Nevada	97	95	65	19	11	2	82
Orange	1,401	1,388	259	941	188	13	1,355
Placer	89	89	44	33	12	1	86
Plumas	36	35	22	13		1	30
Riverside	482	470	108	302	60	12	402
Sacramento	945	924	449	318	157	21	1,161
San Benito	63	63	39	16	8		76
San Bernardino	726	708	149	457	102	18	749
San Diego	1,353	1,327	258	881	188	26	1,227
San Francisco	6,817	5,889	2,443	1,818	1,628	928	6,216
San Joaquin	791	787	398	268	121	7	715
San Luis Obispo	193	193	124	49	20		218
San Mateo	362	360	177	122	61	2	367
Santa Barbara	283	277	123	109	45	6	311
Santa Clara	956	950	445	332	173	6	1,142
Santa Cruz	276	274	144	89	41	2	272
Shasta	120	117	70	34	13	3	153
Sierra	12	12	9	3			13
Siskiyou	177	170	82	71	17	7	197
Solano	232	224	135	61	28	8	201
Sonoma	482	480	267	141	72	2	526
Stanislaus	259	257	94	120	43	2	268
Sutter	43	43	31	10	2		49
Tehama	107	107	65	40	2		104
Trinity	21	18	12	4	2	3	13
Tulare	315	312	122	184	36	3	332
Tuolumne	59	59	44	10	5		54
Ventura	184	184	80	64	40		193
Yolo	115	113	66	36	11	2	125
Yuba	116	112	68	28	16	4	96

Distribution of White Brides by Nativity, for Counties: 1915 and 1914.

Total brides, 1914					Per cent of white brides					
White					Born in California		Born in other states		Foreign born	
Total	Born in California	Born in other states	Foreign born	Non-Caucasian	1915	1914	1915	1914	1915	1914
30,445	11,073	18,183	6,189	1,457	36.0	36.4	45.4	43.3	18.6	20.3
2,810	1,309	878	623	73	46.2	46.6	32.7	31.2	21.1	22.2
1	1				50.0	100.0			50.0	
49	29	6	14	1	54.3	59.2	20.0	12.2	25.7	28.6
228	118	92	23	7	48.6	49.6	48.5	40.3	7.9	10.1
31	24	3	4		75.8	77.4	15.1	9.7	9.1	12.9
48	31	14	3	3	65.0	64.6	17.5	29.2	17.5	6.2
269	120	88	61	1	49.6	44.6	30.5	32.7	19.9	22.7
24	11	10	3	1	40.7	45.8	48.2	41.7	11.1	12.5
33	23	7	3		72.2	69.7	25.0	21.2	2.8	9.1
971	343	394	234	15	35.2	35.3	45.1	40.6	19.7	24.1
76	42	30	4	1	51.9	55.3	38.5	39.5	9.6	5.2
318	165	72	81	9	56.6	51.9	18.8	22.6	24.6	25.5
240	37	169	34	16	12.4	15.4	70.8	70.4	16.8	14.2
43	18	20	5	4	48.5	41.9	48.5	46.5	3.0	11.6
430	128	245	57	7	29.0	29.8	59.1	57.0	11.9	13.2
205	81	74	50	2	44.6	39.5	27.5	36.1	27.9	24.4
43	25	15	3	1	70.8	58.1	29.2	34.9		7.0
62	33	28	1		52.7	53.2	32.7	45.2	14.6	1.6
7,211	1,251	4,618	1,342	230	16.5	17.4	66.2	64.0	17.3	18.6
80	29	39	12	4	38.1	36.3	40.2	48.7	21.7	15.0
728	397	215	116	2	51.2	54.6	35.4	29.5	13.4	15.9
14	8	5	1		78.6	57.2	21.4	35.7		7.1
210	124	42	44	6	67.1	59.0	17.4	20.0	15.5	21.0
147	72	44	31	1	43.9	49.0	34.5	29.9	21.6	21.1
70	47	21	2	5	68.7	67.1	29.7	30.0	1.6	2.9
2	1		1		66.7	50.0	33.3			50.0
194	117	48	29	1	66.1	60.3	23.9	24.7	8.0	15.0
197	113	66	18	1	61.3	57.4	24.8	33.5	13.9	9.1
82	61	11	10		68.4	74.4	20.0	13.4	11.6	12.2
1,842	264	913	165	13	18.7	19.7	67.8	68.0	13.5	12.3
84	45	30	9	2	49.4	53.6	37.1	35.7	13.5	10.7
30	18	12			62.9	60.0	37.1	40.0		
394	91	242	61	8	23.0	23.1	64.2	61.4	12.8	15.5
1,141	578	380	183	23	48.6	50.7	34.4	38.3	17.0	16.0
76	53	13	10		61.9	69.7	25.4	17.1	12.7	13.2
731	142	450	139	18	21.0	19.4	64.6	61.6	14.4	19.0
1,197	200	780	208	30	19.4	17.4	66.4	65.2	14.2	17.4
5,332	2,314	1,824	1,604	884	41.5	43.4	30.9	24.8	27.6	31.8
707	363	219	125	8	50.6	51.3	34.0	31.0	15.4	11.7
217	128	56	33	1	64.2	59.0	25.4	25.8	10.4	15.2
361	184	107	70	6	49.2	51.0	33.9	29.6	16.9	19.4
309	125	133	51	2	44.4	40.5	39.4	43.0	16.2	16.5
1,130	553	341	236	12	46.8	48.9	35.0	30.2	18.2	20.9
271	134	80	57	1	52.5	49.5	32.5	29.5	15.0	21.0
145	89	39	17	8	59.8	61.4	29.1	26.9	11.1	11.7
13	7	4	2		75.0	53.8	25.0	30.8		15.4
189	77	86	26	8	48.2	40.7	41.8	45.5	10.0	13.8
190	106	59	25	11	60.3	55.8	27.2	31.0	12.5	13.2
525	294	142	89	1	55.6	56.0	29.4	27.0	15.0	17.0
263	87	127	49	5	36.6	33.1	46.7	48.3	16.7	18.6
89	23	13	3	1	72.1	59.0	23.3	33.3	4.6	7.7
102	49	46	7	2	60.7	48.0	37.4	45.1	1.9	6.9
13	13				66.7	100.0	22.2		11.1	
376	125	201	50	6	35.7	33.2	53.8	53.5	10.5	13.3
54	32	11	11		74.6	59.2	16.9	20.4	8.5	20.4
191	84	69	38	2	43.5	44.0	34.8	36.1	21.7	19.9
117	73	31	13	8	58.4	62.4	31.9	26.5	9.7	11.1
90	60	21	9	6	60.7	66.7	25.0	23.3	14.3	10.0

TABLE 16.—Brides Classified by Race, Nativity

County	Single brides										Total	Total
	Total	White				Non-Caucasian						
		Total	Born in Cal.	Born in other states	Foreign born.	Negro	Indian	Chinese	Japanese			
California	24,610	23,341	9,107	9,932	4,302	284	50	46	880	3,159	3,051	
Alameda	2,264	2,216	1,101	655	460	39		5	4	278	280	
Alpine												
Amador	29	29	16	6	7					3	3	
Butte	177	177	87	77	13					13	13	
Calaveras	28	28	21	5	2					2	2	
Colusa	32	32	24	4	4					5	5	
Contra Costa	214	211	106	62	43	2		1		18	18	
Del Norte	28	19	7	9	3		9			3	3	
El Dorado	31	30	22	7	1	1				2	2	
Fresno	718	712	270	312	130	5			1	96	93	
Glenn	48	48	25	19	4					1	1	
Humboldt	247	239	143	86	60		8			26	26	
Imperial	171	161	19	115	27	10				19	16	
Inyo	23	21	11	9	1		2			8	6	
Kern	340	335	106	185	44	5				35	34	
Kings	172	167	77	43	47	2	1	1	1	23	22	
Lake	23	19	15	4		2	2					
Lassen	54	50	28	15	7		4			2	2	
Los Angeles	5,468	5,332	971	3,475	886	122	4	2	8	785	741	
Madera	70	69	29	23	17	1				11	11	
Marin	457	457	268	185	54					86	86	
Mariposa	14	11	8	3			3			1	1	
Mendocino	145	139	98	19	22		6			10	10	
Merced	119	119	56	39	24					12	12	
Modoc	52	52	36	15	1					4	4	
Mono	2	2	1	1								
Monterey	137	134	97	26	11				3	19	19	
Napa	172	172	114	35	23					26	26	
Nevada	78	76	59	12	5			2		11	11	
Orange	1,019	1,010	200	668	133	8			1	102	190	
Placer	69	69	37	21	8					11	11	
Plumas	28	27	18	9			1			3	3	
Riverside	401	370	95	245	60	6	4	1		39	38	
Sacramento	720	701	371	217	113	9	1	2	7	96	94	
San Benito	49	49	34	9	6					8	8	
San Bernardino	544	529	122	323	84	12	2		1	86	85	
San Diego	909	948	214	598	136	19	2			158	158	
San Francisco	5,433	4,534	2,015	1,202	1,317	29		26	844	583	566	
San Joaquin	619	613	333	195	85	1		2	3	93	98	
San Luis Obispo	156	156	109	31	16					13	13	
San Mateo	264	262	140	78	44	1			1	32	33	
Santa Barbara	227	225	108	75	42	1			1	24	22	
Santa Clara	756	753	383	235	135	1			2	84	82	
Santa Cruz	215	215	121	65	29					27	26	
Shasta	94	91	59	21	11		3			15	15	
Sierra	10	10	9	1						2	2	
Siskiyou	134	130	69	47	14		4			16	15	
Solano	178	173	109	45	19	2			1	26	24	
Sonoma	376	374	231	99	44	1		1		48	48	
Stanislaus	226	225	83	104	38	1				15	14	
Sutter	36	36	25	9	2					3	3	
Tehama	86	86	52	33	1					10	10	
Trinity	16	13	11	2			3			3	3	
Tulare	296	293	108	155	30	2			1	25	25	
Tuolumne	46	46	37	7	2					5	5	
Ventura	149	149	76	43	30					26	26	
Yolo	93	91	55	28	8	2				3	3	
Yuba	88	86	59	18	9			1	1	12	10	

and Marital Condition, for Counties: 1915.

Widowed brides								Divorced brides							
White				Non-Caucasian				White				Non-Caucasian			
Born in Calif. formis	Born in other states	Foreign born	Total	Negro	Indian	Chinese	Japanese	Born in Calif. formis	Born in other states	Foreign born	Total	Negro	Indian	Chinese	Japanese
589	1,656	807	85	5	4	14	3,682	3,619	1,113	2,041	465	46	3	1	13
67	112	81	18				322	318	122	148	48	2	1		1
1		2					2	2	1	1					
4	6	8					26	26	14	11	1				
1		1					3	3	8						
1	1	3					3	3	1	2					
5	6	7					37	37	21	13	3				
3							5	5	1	4					
1	1						4	4	3	1					
12	45	36	3	1		1	79	78	29	41	8	1			
		1					3	3	2	1					
9	8	9					32	32	16	12	4				
2	10	4	8				26	25	4	18	3	1			
3	8			2			6	6	2	4					
8	21	5	1				63	66	12	51	3	3			
6	7	9	1				15	15	8	6	1				
							5	5	2	3					
	1	1					3	3	1	2					
54	482	205	40				728	704	94	526	84	21			8
1	7	3					12	12	5	7					
30	37	19					114	113	38	60	15	1			
1							2	2	2						
4	4	2					12	12	6	5	1				
3	5	4					8	8	2	4	2				
3	1						8	8	5	3					
							1	1	1						
9	8	2					21	21	9	11	1				
8	12	6					32	32	19	10	3				
5	2	4					8	8	1	5	2				
18	137	35	2				190	188	32	136	20	2			
3	6	2					9	9	4	8	2				
1	2						5	5	3	2					
4	27	7	1				42	42	9	30	3				
31	42	21	2				129	129	47	59	23				
2	4	2					6	6	3	3					
10	61	14	1				96	94	17	73	4	2			
16	111	31					226	221	28	172	21	5			
182	257	177	8		3	6	801	789	296	359	134	2		1	9
29	40	24					82	81	36	33	12	1			
2	8	8					24	24	13	10	1				
11	18	8					66	66	26	31	9				
5	15	2	1			1	32	30	10	19	1	2			
13	48	21	1				116	115	49	49	17	1			
7	11	8				1	34	33	16	13	4	1			
6	8	1					11	11	5	5	1				
2															
8	7			1			27	25	5	17	3		2		
10	9	5	1		1		28	27	16	7	4	1			
11	20	17					56	58	25	22	11				
3	7	4	1				18	18	8	9	1				
2	1						4	4	4						
6	8	1					11	11	7	4					
1	1	1					2	2		1	1				
5	17	8					24	24	9	12	3				
2		8					8	8	5	8					
4	13	9					9	9		8	1				
2	1						19	19	9	7	8				
4	5	1	1	1			16	16	5	5	6				

TABLE 17.—Brides Classified by Race, Nativity

County	Single brides										Total	Total
	Total	White					Non-Caucasian					
		Total	Born in Cal.	Born in states	Foreign born	Negro	Indian	Chinese	Japanese			
California	25,261	24,023	9,439	9,644	4,940	290	56	27	865	3,179	3,043	
Alameda	2,264	2,216	1,104	619	493	36		4	8	277	265	
Alpine	1	1	1									
Amador	45	44	27	5	12		1			4	4	
Butte	186	179	91	72	16	2	4		1	24	24	
Calaveras	25	25	20	2	3					3	3	
Colusa	40	37	26	9	2	1	2			3	3	
Contra Costa	216	216	99	66	51					26	25	
Del Norte	24	23	11	9	3		1			1	1	
El Dorado	27	27	22	2	3					3	3	
Fresno	787	780	289	294	197	2	1	2	2	111	108	
Glenn	61	60	33	24	3		1			7	7	
Humboldt	267	259	139	50	70		8			30	30	
Imperial	200	200	32	139	29	9				21	16	
Inyo	36	32	15	16	1		4			7	7	
Kern	338	332	102	188	42	5			1	44	43	
Kings	166	166	71	55	40					17	16	
Lake	33	32	21	9	2		1			7	7	
Lassen	52	52	30	22						3	3	
Los Angeles	5,910	5,762	1,112	3,553	1,097	125	3	5	15	801	753	
Madera	63	62	25	29	8		1			13	11	
Marin	507	506	304	129	73	1				82	81	
Mariposa	12	12	8	3	1					2	2	
Mendocino	166	161	90	26	36		5			23	22	
Merced	128	127	67	32	28		1			9	9	
Modoc	66	62	42	19	1	1	3			5	4	
Mono	1	1	1									
Monterey	157	156	102	35	19				1	17	17	
Napa	151	150	96	41	13	1				22	22	
Nevada	71	71	55	6	10					2	2	
Orange	964	946	226	613	107	8				179	177	
Placer	67	65	36	22	7	1			1	5	5	
Plumas	23	23	13	10						4	4	
Riverside	323	316	80	188	48	3	3		1	44	43	
Sacramento	867	861	470	244	137	13			3	137	133	
San Benito	66	66	50	9	7					7	7	
San Bernardino	598	580	129	348	108	9	4			87	83	
San Diego	929	906	175	565	168	17	3	1		171	164	
San Francisco	5,138	4,282	1,977	904	1,401	18		12	826	476	457	
San Joaquin	555	550	303	154	93	3		2		83	81	
San Luis Obispo	183	182	122	36	24			1		15	15	
San Mateo	271	269	144	69	56	1			1	35	33	
Santa Barbara	254	252	111	97	44	1			1	27	27	
Santa Clara	906	900	477	246	177	6			2	105	104	
Santa Cruz	214	214	112	53	49					27	26	
Shasta	121	114	74	25	15	3	4			11	10	
Sierra	10	10	7	2	1					2	2	
Siskiyou	157	151	65	63	23	2	4			14	13	
Solano	162	154	89	45	20	8				15	14	
Sonoma	420	420	250	102	68					49	48	
Stanislaus	230	228	80	104	44	2				24	23	
Sutter	37	36	23	11	2		1			2	2	
Tehama	76	74	40	32	2	1	1			12	12	
Trinity	8	8	8							1	1	
Tulare	321	323	113	167	43				1	29	26	
Tuolumne	34	34	26	4	4					13	13	
Ventura	152	151	79	44	28	1				23	22	
Yolo	95	89	62	18	9	6				15	13	
Yuba	81	76	54	15	7	4			1	3	2	

and Marital Condition, for Counties: 1914.

Widowed brides								Divorced brides							
White				Non-Caucasian				White				Non-Caucasian			
Born in Cal. form.	Born in other states.	Foreign born.		Negro.	Indian.	Chinese.	Japanese.	Total.	Born in Cal. form.	Born in other states.	Foreign born.	Negro.	Indian.	Chinese.	Japanese.
681	1,612	800	107	4	8	17		3,462	3,379	1,008	1,927	449	72	4	5
76	117	72	12					342	329	129	142	58	11	1	1
1	1	2						1	1	1					
9	9	6						25	25	13	11	1			
1	1	1						3	3	3					
2		1						8	8	3	5				
8	9	8	1					28	28	13	13	2			
	1														
	3							3	3	1	2				
23	50	30	6			2		88	88	31	50	7			
5	2							9	9	4	4	1			
13	11	6						30	29	13	11	5	1		
	12	4	5					28	24	5	18	1	2		
1	4	2						4	4	2	2				
11	20	12	1					55	55	15	37	3			
3	8	5	1					24	23	7	11	5	1		
3	3	1						4	4	1	3				
1	1	1						7	7	2	5				
61	511	181	45			8		730	696	78	554	64	30	1	3
2	7	2	2					8	7	2	3	2	1		
28	32	26	1					141	141	70	54	17			
	2														
9	5	8				1		27	27	16	11				
1	5	3						11	11	4	7				
2	1	1		1				4	4	3	1				
								1	1			1			
5	5	7						21	21	10	8	8			
7	11	4						25	25	10	14	1			
1	1							9	9	5	4				
9	130	38	2					222	219	29	170	20	3		
1	3	1						14	14	8	5	1			
8	1							3	3	2	1				
3	30	10				1		25	25	8	24	3			
45	58	30	2			2		160	157	63	78	16	3		
2	2	3						3	3	1	2				
5	50	28	3	1				69	68	8	52	8	1		
18	119	27	6		1			127	125	16	96	13	2		
185	165	157	11		2	6		602	593	202	255	136	7	1	1
31	29	21	1			1		77	76	29	36	11	1		
3	8	4						20	20	3	12	5			
14	12	7	2					61	59	26	26	7	2		
6	20	1						30	30	8	16	6			
26	41	37				1		129	125	50	54	22	3		
3	12	6				1		31	31	14	15	2			
5	4	1		1				21	21	10	10	1			
	1	1						1	1		1				
3	9	1		1				25	25	9	14	2		1	
5	4	5	1					24	22	12	10		2		
20	15	13	1					57	57	24	25	8			
3	16	4	1					14	12	4	7	1	2		
								1	1			1			
2	2	4						16	16	7	8	1			
1								4	4	4	4				
5	17	4	1			1	1	29	27	7	17	3	2		
3	5	5						7	7	3	2	2			
1	15	6				1		18	18	4	10	4			
5	6	2	2					15	15	6	7	2			
1		1						12	12	5	6	1			

TWENTY-FIFTH BIENNIAL REPORT

OF THE

STATE BOARD OF HEALTH

OF

CALIFORNIA

FOR THE

Fiscal Years from July 1, 1916, to June 30, 1918



CALIFORNIA STATE PRINTING OFFICE
SACRAMENTO
1918

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REPORT OF THE SECRETARY.

With the progressive enlightenment of the people in matters pertaining to human welfare in general and the possibilities in the way of increasing health and lengthening life by applying this knowledge has come in recent years increased recognition of the importance of health departments by legislative bodies, national, state and municipal. California has shared in this march forward and in a degree commensurate with her recognized position of advancement among the states in all matters pertaining to the public welfare. The result of this general forward movement has been a steady increase in the activities and responsibilities of the State Board of Health, which in turn, have necessitated increased expenditures beyond the natural increase as accounted for by the growing population of the state. That these increased expenditures have been wisely made and are amply justified may be gleaned from the consideration of one item only—that of the control of typhoid fever. In 1906 the board had no bureau of sanitary engineering and no bureau of communicable diseases and the typhoid death rate for that year was 32.2, indicating a probable case incidence of 7,000 for that year. Translated into human lives and dollars and cents this meant an economic loss of \$2,100,000, to say nothing of the loss of 650 human lives. During the year just ended the typhoid mortality rate was 6.1, which means that estimated for the present population of the state there are now living 9,300 people who would have been dead had the 1906 rate continued, and still the per capita expenditure by the State Board of Health is less than seven cents per annum.

That public health is purchasable and that communities may within reasonable natural limitations determine their own death rates are facts that are fast securing public recognition in California. The exceptions are in the rural communities and the smaller incorporated towns. Here lies one of our greatest problems; for the people of these communities are, by reason of this lack of efficient health supervision, suffering by comparison with their more fortunate urban neighbors in respect to their expectation of freedom from death by preventable diseases and possibly also to a certain extent in their vital resisting powers to infection. Strange and unexpected as it may seem, nevertheless it is a fact that morbidity and mortality tables show a decided advantage in city over rural life and the military reports credit the city boy with greater staying powers than the country boy.

Doubtless the universal lack of any sort of medical school inspection and infant hygiene teaching has a great deal to do with this, operating largely through the neglect in early life of correctable defects, that would have been recognized under more favorable public health conditions.

The remedy lies in one of two directions: First, the provision of legal means for the creation of local health departments having supervision over rural territory, the adequate financing of these local health units, and the development of the principle of full-time health service. Second, an expansion of the duties of the State Board of Health to the extent of the actual administration of the public health in such com-

munities, taking from them the obligation to serve their citizens in such matters, in which obligation they are now derelict.

Considering the first alternative, it will be immediately appreciated that securing provision for the legal organization of efficient local health departments is the least of the difficulty. Indeed, we already have legal provision for health officers for incorporated towns and for county officers having jurisdiction over unincorporated territory. Furthermore, in the 1917 session of the legislature an act was passed providing for the incorporation of local health districts which could embrace towns and rural territory in any sort of combination, each incorporated town and each county taking part in the formation of such a district, forming one unit thereof and being represented by one trustee on the board. A more difficult matter is the education of the public and of the governing bodies of these rural communities to the advantages to be gained by supporting an adequate health department, presided over by a full-time and properly qualified health officer.

It is my belief, based on many years' observation and experience in this work, that progress in this direction will continue to be slow and that we shall be forced eventually to turn to the second alternative if we are to see the rural districts cared for as adequately as the cities now are in public health matters. It is nearly two years since the enactment of the Local Health Districts Act and not one district has yet been formed; and although it has been required by statute for many years that the counties shall each have a health officer, in only one county is there a full-time, properly qualified health officer, equipped with a staff of assistants and reasonable financial support. In all of the others the health officer devotes little or none of his time to the duties of his office and is not paid to do more. Usually he is selected for reasons other than his qualifications as a health officer.

The plan of placing the burden of local health administration outside of the larger cities on the State Board of Health has many points in its favor, among which may be enumerated:

First—The State Board already has an organization and staff of experts, such as no city in the state, however large, could ever hope to maintain.

Second—The saving of overhead expenditures would be tremendous, as the only additional employees needed for any given locality would be the district health officer, public health nurses and inspectors.

Third—An important advantage would be in the wiping out of the boundary lines of jurisdiction which now exist between town and county territory and which result in a state of confusion, which in some localities virtually nullifies the efforts of conscientious officials to serve the people efficiently. Should the state assume the supervision of local health administration, excepting within freeholders chartered cities, it would necessitate an increase in the staff of district health officers from six, the present number, to thirty or forty, and would necessitate an increase that would notably affect the budget necessary for the support of the department. However, increases at one end would be more than balanced by saving at the other and increased efficiency would be the inevitable result.

During the past year's experience with district health officers, small as has been the force in comparison with the large area of the state,

numerous instances have been uncovered by them, showing the urgent need of better health supervision than now obtains in most rural communities under the present system. As an example, the epidemic of smallpox which was studied in a certain unincorporated town having about twenty-five hundred inhabitants may be mentioned. The health officer traced the infection to this town from one of the shipbuilding centers. His investigation disclosed the fact that smallpox had existed unrecognized in this community for three months or more in a mild form, during which time nearly one hundred cases had occurred. This condition of affairs, which had limitless possibilities for the spread of the disease to other communities, was the direct result of the lack of any organized health department in that community. The work accomplished by our district health officer exemplified the possibilities capable of realization by an expansion of the service. Could this be done by increasing the force to such an extent that the entire state would be covered adequately, the same attention would be paid to local affairs as would be possible otherwise only with a full-time and properly supported and qualified local health officer.

The District Health Officer.

During the biennial period just ended a number of new activities have been added to the duties and responsibilities of the State Board of Health. Among these may be mentioned, first, the newly authorized staff of state district health officers provided for by the legislature of 1917. In the organization of this new work the state was divided into six districts, the North Coast, the Central Coast, the South Coast, and the Northern, Central and Southern. This division of the state gave a population to the North Coast District of 216,000, the Central Coast District, 1,068,729, the South Coast 934,075, the Northern District 278,260, the Central 310,613, and to the Southern 154,511. Each of the six men provided for under this appropriation was secured by a rigid civil service examination which was open to the entire country, and the manner in which they have attacked the problems presented in their various districts is the best of evidence that this manner of selection of employees, who must be skilled in professional and technical subjects, is the very best that can be devised. The co-operation of these men with the Bureau of Communicable Diseases, the Bureau of Social Hygiene, and the other divisions of the State Health Department has been of the greatest service and benefit to the divisions concerned. Their influence in stimulating interest on the part of some of the local health officers has been of great value to the cause of public health in general and many communities have profited by their advice and instruction in sanitary matters. Many lectures upon health subjects have been given before public gatherings, teachers institutes, conventions, etc., by these officers and this means of enlightening local communities upon their health problems has been encouraged and is proving to be an important factor for the creation of a sentiment for full-time health service among the communities of the state.

The tendency is quite common on the part of local health officers to welcome the state man with the idea that he is going to take over some of his work for him, and some have felt a keen disappointment in finding that it was not the intention of the state to take over the actual

direction of strictly local health matters. With a staff of only six men for the state, covering 155,652 square miles, it has proven impossible for the men to devote sufficient time to details connected with local affairs to warrant this procedure to any greater extent than is necessary for an occasional object lesson to local officials as to what can be accomplished. Were there much attempted in this line a large part of the state would necessarily be left without attention so far as the state officers are concerned. Much has been accomplished by the district health officers in the strengthening of the relationship existing between the state and local health departments which result naturally follows their actual personal contact with the local health officers in the course of their frequent trips through their territories.

A careful consideration of the results accomplished by the officers and of the latent possibilities disclosed by a perusal of their reports leads to the conclusion that the employment of these officers has been a good investment, but that the full benefits possible of achievement through an organization of this kind can not be secured until more men are employed with a consequent reduction in the size of the districts which they must cover. In fact, the carrying out of the plan to its logical conclusion would mean an extension of the responsibilities of the state organization in local affairs to the extent of the actual assumption of local administration by the State Board of Health outside of freeholders chartered cities.

Pure Milk.

The milk law, enacted in 1917, has, so far in its operation, given promise of being a most important factor for improving the health and for limiting the spread of certain communicable diseases. Although the enforcement of this law is entrusted principally to the State Dairy Bureau, certain features of its enforcement are matters for the State Board of Health, and through the medium of co-operation between the two state departments, much good is to be looked for in the future.

As a public health problem the production and distribution of milk ranks high in importance, and the control of these matters is more intimately associated with the recognized duties and responsibilities of a health department than with those of any other subdivision of the state government. This should be recognized in a closer association between the administrators of the dairy and milk law and the State Board of Health than exists at present.

Milk is the only largely consumed food that is used chiefly in a raw state, and this accounts for the fact that milk is responsible for more sickness and deaths than all other foods combined. It is a perfect culture medium for bacteria, an efficient vehicle for the transport of bacteria, present by reason of diseases of the cow or introduced during the process of collection and delivery to the consumer.

Among the diseases that may be transmitted by milk are typhoid, diphtheria, scarlet fever, Malta fever, septic sore throat, foot and mouth disease, milk sickness and tuberculosis. The first three are due to bacteria peculiar to man and which are present by contamination of the milk by cases or carriers of the infection among the persons having to do with its collection or distribution. The protection of the milk user

against the possibility of disease, having its origin in the milk supply, lies in the efficient control of the production, handling and distribution of milk. Better supervision of pasteurizing plants is necessary and the managers of these plants should have a better knowledge of the scientific principles underlying the working of their machines. They should be better informed on the elementary facts concerning the relationship of the degree of heating of the milk, the rapidity of cooling and the cleanliness of apparatus to the bacterial content of the product. However, the safety of milk supplies is not to be insured solely by attention to pasteurization nor to the exclusion of known disease producing bacteria.

The number of bacteria in milk is of great importance aside from the question of the presence of pathogenic or disease producing forms, especially where the milk is intended for consumption by young infants. The products of growth of so-called harmless bacteria, when these bacteria are present in the numbers frequently observed in market milk, are sufficient to cause grave intestinal disturbances in babies and are the principal cause of summer complaint among them. It is possible to produce a bacteriologically clean and safe product without going to the expense for equipment necessary in furnishing a certified dairy. Education and instruction in these matters should be carried to every dairyman in the state. The problem is one of public health and should be so recognized.

The Drinking Cup Law.

Chapter 744, enacted at the 1917 session of the legislature, provided for the sterilization of drinking receptacles in all public places or the alternative use of individual cups. Regulations have been adopted under this act prescribing the methods to be adopted in the sterilization of drinking receptacles used at soda fountains, saloons and all other public places where articles of drink are served to the public. These regulations prescribe four alternative methods: sterilization by steam, sterilization by boiling, sterilization by immersion in a 5 per cent caustic soda solution and the use of individual drinking cups of paper or other temporary material. Experiments conducted in the State Hygienic Laboratory with various chemical means of disinfection demonstrated the fact that the cheapest and most efficient method was immersion in a solution of caustic soda, and this method has been urged very widely and much has been accomplished by the district health officers in securing the installation of means for carrying it out. The growing recognition of the importance of the transfer of mouth secretions by means of eating and drinking utensils in the spread of many infectious diseases makes easier the enforcement of such laws as this for the sterilization of drinking glasses. As the practice is extended and the public becomes educated to expecting and demanding cleanliness in such matters a substantial improvement is to be looked for in the morbidity figures for the sputum-borne infections.

The Common Towel Law.

The common towel law, which was enacted in 1917, has been very generally enforced and the public has become so educated to the evils of the common roller towel that few instances of the infraction of this

law are to be found. The following ticket, widely distributed among traveling men, has proven of great value in securing the general observance of the law:

DON'T USE THIS TOWEL.

It is a common towel and may carry disease. Common towels are prohibited by law in hotels, restaurants, factories, stores, barber shops, office buildings, schools, public halls, railway stations, boats, or any other public place, room or conveyance. Violation of this act, chapter 745, acts of 1917, constitutes a misdemeanor, punishable by a fine not exceeding \$25.

**These Notices Are Supplied by
CALIFORNIA STATE BOARD OF HEALTH, Sacramento.**

Malaria.

The principal activities under the heading of the eradication of malaria have been carried on under the Mosquito Abatement Act of 1915. This act provided for the establishment of local districts for the eradication of mosquitoes, the procedure being the presentation of a petition signed by the residents of the district to the number of 10 per cent of the vote cast for governor at the previous election. The boards of supervisors, upon receipt of such petition, are, under this act, authorized to create a mosquito abatement district and to levy a special tax for carrying on the work, such as oiling, draining, payment of salaries, which tax can not exceed 10 cents per hundred dollars of assessed valuation of the property within the district. At the beginning of the present biennial period two such districts had been formed, one comprising the city of Sausalito and vicinity, and the other, the cities of San Mateo, Burlingame and Hillsborough. During the present biennial period, under the stimulus of the Division of Entomology of the Bureau of Communicable Diseases, seven additional districts have been formed in various parts of the state and as many more are in process of formation. These districts have been especially active in the Sacramento and San Joaquin valleys where malaria is one of the most important public health problems. While malaria is especially significant as a factor in producing physical unfitness, it also causes many needless deaths each year. The death rate from malaria, never very large as compared to other infections, has been declining steadily in recent years. As with hookworm, the magnitude of the problem and its importance to the community is evidenced not so much by the deaths resulting from its presence in the community as by the large amount of illness and physical incapacity with consequent great economic loss and predisposition to other infections.

Imperfections in the present law have been found in its operation, but with all its faults much good has already been accomplished. While the morbidity statistics of malaria are much more significant than the mortality statistics, the following table of the death rate from this disease during the past ten years suggests that the great reduction in

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LETTER OF TRANSMITTAL.

OFFICE OF CALIFORNIA STATE BOARD OF HEALTH.

SACRAMENTO, September 15, 1918.

To His Excellency, WM. D. STEPHENS,

Governor of California.

DEAR SIR: In accordance with the state law, I herewith transmit to you the twenty-fifth biennial report of the State Board of Health for the sixty-seventh and sixty-eighth fiscal years.

Respectfully submitted.

WILFRED H. KELLOGG,
Secretary of State Board of Health.

mortality must indicate a corresponding improvement in morbidity, actual figures for which are lacking:

	Number of deaths	Death rate per 100,000 population
1909	112	4.9
1910	113	4.7
1911	121	4.9
1912	101	3.9
1913	77	2.9
1914	70	2.5
1915	45	1.6
1916	51	1.8
1917	47	1.5
1918		

The reporting of cases of malaria must be improved greatly and it will be one of the duties of the district health officers in the future to see that local physicians are alive to their responsibilities in this matter and that they do not neglect it, as has been the rule in the past. It is also necessary that the powers of the board be strengthened in the matter of compelling the proper screening of habitations in malarial districts. Improvement is needed in the present law to the end that the direction of the work shall be upon a better basis, preferably in the hands of the State Board entirely, which should be empowered and financed to supervise the field work by the appointment and payment of the directors of the abatement districts. According to the statement of Mr. Freeborn, who has been the acting director of the division during the past year, it costs on an average of \$250 per square mile per year to carry on the work of mosquito abatement, which cost will decrease somewhat with succeeding years as permanent control is inaugurated. Under the present Mosquito Abatement Act limiting the tax to ten cents per one hundred dollars, an average valuation of nearly four hundred dollars per acre is required to raise sufficient money to prosecute the work properly. As improved agricultural land in California probably does not average in value over \$180 per acre, it follows that it is necessary at present in most cases to include a municipality within the district in order to raise sufficient funds to insure success. It is manifest that a higher tax rate can not be considered, so that the proper solution would seem to be the proposed amendment to the act placing the employment of the directors of the districts in the hands of the State Board of Health, which would have the effect not only of lightening the financial burden of the district, but will, which is fully as important, insure the scientific direction of the work under the department's Division of Entomology.

Hookworm.

Through its Division of Parasitology, the State Board of Health is alert to the possibilities which exist in the natural conditions which favor the spread of oriental and tropical parasitic infections. By reason of its semitropical climate, its close relation commercially to the oriental countries and to the presence in considerable numbers in certain portions of the state of oriental persons, principally Japanese and Hindus,

the investigation of these diseases is of great importance. In September, 1917, an intensive campaign for the eradication of hookworm from the mines of California was begun by the Division of Parasitology, continuing work which had been carried on previously by the Hygienic Laboratory. A very complete survey of the gold mines was made and by co-operation with other agencies, such as the Industrial Accident Commission, many infected miners were treated. The presence of hookworm in California has been confined so far as known to the deep gold mines. A few years ago a large percentage of the miners in the Mother Lode District were infected with hookworm. Many thousands of fecal specimens have been examined, a standard treatment prescribed and, through the co-operative agencies mentioned above, very generally applied. In addition there has been undertaken a thorough campaign of sanitation in the mines by which the conditions favorable to the spread of hookworm, by contamination of the soil, have been removed.

The report of the director of the division is referred to for a detailed account of the survey. This division has recently undertaken a new line of work in the investigation of oriental and tropical intestinal parasitic infections in the delta region and among the rice fields. For this purpose a houseboat has been equipped as a floating laboratory with living quarters for the workers, and is now engaged in this work in the San Joaquin Valley. Reference is made, for those particularly interested in the work of this Division, to publications by the staff, three of which have appeared as a departmental series.

Further extensions of the powers of the board are needed in the matter of the regulations for the treatment of venereally diseased persons, the prohibition of the selling of nostrums for self-treatment, and the suppression of quack advertising. It is hoped that some of these deficiencies will be corrected at the coming session of the legislature, thus enabling California to continue in the van of progress in the matter of the administration of this most important phase of public health work—the control of venereal disease.

Ophthalmia Neonatorum.

The prevention of ophthalmia neonatorum was a subject of concern before the establishment of the Bureau of Social Hygiene. Outfits of nitrate of silver solution have been distributed, free of charge, through the Bureau of Communicable Diseases, to physicians and midwives, and birth certificates are provided with a query as to whether or not this measure has been used. During the biennial period just ended, 10,600 of these outfits were distributed.

Co-operation With Military and Naval Authorities in Handling Military Camp Problems.

Through the Division of Sanitary Inspection much work was accomplished in extra cantonment zone sanitation during the period of mobilization of troops. It is gratifying to record that the organization and reputation for efficiency of the state health organization is such that the United States Public Health Service did not consider it necessary to detail service officers for this work in California. The food sanitation act and the sterilization of drinking utensils law were

rigidly enforced by our own officers in the vicinity of the various camps. Many permanent improvements and hundreds of reinspections were made and much is to be expected in the future as a result of the educational influence of these measures.

The Bureau of Communicable Diseases with its Hygienic Laboratory was able to render valuable aid to the government authorities while at the same time serving our own citizens. About three thousand Wassermann blood tests were performed by the laboratory for the Mare Island Station, the Submarine Base at San Pedro and the Reserve Training Camp at San Pedro. The bureau also did diagnostic work for the School of Military Aeronautics and the Students' Army Training Camp at Berkeley, and for the United States Naval Training Camp and Fort McArthur at San Pedro.

Through the Division of Entomology the supervision of mosquito eradication work in the vicinity of the San Pedro, Wilmington and Long Beach shipyards was carried on successfully at a time when the mosquito nuisance threatened to become so great as to stop the work of shipbuilding.

Other activities of a similar nature were some very extensive laboratory examinations for meningitis carriers carried on for the Military School of Aeronautics at Berkeley and in co-operation with the United States Public Health Service and the cities of Los Angeles and San Diego for the benefit of the naval stations at those cities.

The Bureau of Sanitary Engineering is credited with several instances of valuable aid extended to the military authorities in improving the sanitation of camps. The following instances will serve as examples, but do not represent the entire list:

1. *Investigation and report on sewage disposal at Camp Kearny in May, 1917.*

This investigation was made at the request of the officer in charge of construction before the camp site had been finally selected, and the site was still heavily covered with underbrush so that inspection had to be made on horseback. A preliminary report was submitted to the quartermaster and to the civilian engineer selected to design the works. The type of plant and disposal site were considered in detail from a viewpoint of the local needs. In this advice the civilian engineer concurred, but the standard type of plant used by the army elsewhere and ill-adapted to this arid region was later constructed. Subsequently, numerous inspections were made from time to time to aid the officers in the operation of the plant to get the best results possible.

2. *Sanitary inspections of water supply, sewage disposal, and garbage disposal of Camp Fremont and vicinity.*

These inspections were made just as the camp was being established and were initiated by the bureau with a view to making the zone surrounding the camp safe for the purpose. The work consisted of the ordinary sanitary inspections and as a result a great many dangerous spots, such as overflowing sewers, dangerous water supplies, fly-breeding manure piles, mosquito-breeding holes and the like were abated.

3. *Sewage disposal of Mather Field, Sacramento, California.*

Preliminary inspection was made of the site of this camp immediately after its selection at the request of the constructing officer. All things considered, a disposal was advised, including a pumping chamber, Imhoff tank and sewer farm. There was some objection to using a sewer farm and later an intermittent sand filtration plant was substituted for the land disposal. The bureau co-operated further in passing on all plans for this work and on the grade of sand that should be selected. Subsequently, when the plant was completed, several inspections were made and recommendations given for improving the operation of the plant and the making of control tests.

4. *A special investigation was made of a proposed water supply to be obtained from the Ravenswood wells on the marsh land of San Francisco Bay for use of Camp Fremont.*

A serious question arose as to whether continued heavy draft on these wells would result in drawing brackish water into the wells. Intensive pumping and sampling were carried on by the bureau and a geological investigation made from which to draw proper conclusions. The army authorities were advised that there was no evidence to show that brackish water need be expected and this supply was subsequently developed.

Venereal Diseases.

One of the most important of advancements in public health that have been made for many years is the general recognition by the public at large of the venereal disease problem as one of public health and a most important one at that. This movement, which has been rendered possible only by the exigencies of the war, has resulted in the formation, under the State Board of Health, of a new bureau, that of Social Hygiene. This work, which had been a dream of Dr. W. A. Sawyer, my predecessor in office, and before him, of Dr. W. F. Snow, was rendered possible of realization by the influence exerted for the attack on these problems by the Secretary of War. California had already been a pioneer to the extent of making venereal diseases reportable in 1909, and the work of both Doctors Snow and Sawyer was paving the way to a more active attack upon the problem of venereal diseases, when the circumstances brought about by the needs of the army rendered possible the immediate inauguration of the work on a scale commensurate with its importance.

The report of the Director of the Bureau of Social Hygiene sets forth in detail the scope of the work which, at the present time, corresponds very closely to that of the United States Public Health Service and of many other states that have established similar bureaus. California was the first state in the Union to finance a bureau for the control of venereal diseases, and its original program, as developed by Doctor Sawyer, has been the basis for much of the work that has followed, both state and national, since that time. Through the influence of the Military Welfare Commission and the quick appreciation of the needs of the situation on the part of Governor Stephens, the sum of \$60,000 was appropriated out of the state's emergency funds for the uses of the bureau, which was created by the State Board of Health in August, 1917.

It is the firm determination of this Department that this work shall not languish with the cessation of the war, but that it shall be continued with the same enthusiasm that has marked the conduct of the work since the organization of the bureau. Although the State Board of Health possesses, under the existing laws, ample power to deal with most phases of the subject of communicable diseases in general and has made very comprehensive regulations for the control of venereal diseases, certain additions are necessary for the prosecution of the work of supervision of these diseases in a satisfactory manner in the future. California's law for the reporting of venereal diseases was early on the statute books, having been passed in 1909, but at the present time reporting is still by number only. Reporting by name is possible under the regulations of the board only under circumstances that can be construed as violations of the quarantine regulations. I believe it to be essential in dealing with venereal diseases that reporting of cases by name be adopted and that there is no reason for treating these diseases in any different manner than the other contagious diseases. There is no reasonable ground for opposition to the reporting of such cases by name because the records of the state in such matters will be absolutely safe from any form of publicity and inaccessible to unauthorized persons. The same objection was raised originally to the reporting of tuberculosis, but such objection is no longer thought of and no grounds for complaint have ever developed during the existence of such reporting. As to the objections to reporting by name that are made by physicians and their fears that the treating of cases will be interfered with and that patients will not come to them, knowing they will be reported, I feel sure these will all prove groundless in practice. The enforcement of reporting by physicians will be easier in the case of these diseases than in any of the other infections as the tracing of such delinquencies will be so easy that no physician will dare disregard the law. The present system of reporting by number is valueless either for statistical purposes or for control.

Bubonic Plague and Squirrel Eradication.

The continued existence of bubonic plague among ground squirrels of California after ten years of work for their extermination should be a matter of general concern and should prompt us to redouble our efforts to eradicate them. California is definitely on the map as one of the endemic foci of this disease, others being Arabia, Manchuria and Thibet.

The work of squirrel eradication is being carried on by the United States Public Health Service in co-operation with the State Board of Health, and the amount of money being expended in the work averages about sixty thousand dollars per year, less than half of which is contributed by the state through funds appropriated to the State Board of Health. The work is carried on by intensive poisoning operations in those localities shown to be plague infected. This is determined by sending hunters over the area under investigation, examining in the laboratory the squirrels shot and concentrating poisoning operations in the places found to be infected. This method is made necessary by reason of the lack of funds to carry on more extensive work. In November, 1917, the service surrendered charge of eradication work in Merced,

Stanislaus, San Benito and Monterey counties to the State Horticultural Commission and has since confined its operations to the counties of Contra Costa, Alameda and San Mateo. Plague-infected squirrels were found in the latter group of counties which surround the bay of San Francisco, on which is located the city of San Francisco and which was the scene of a human plague epidemic in 1907.

Until plague-infected ground squirrels are entirely eradicated from California we shall always have a sword of Damocles hanging over our heads. So long as infection persists among the ground squirrels the possibility of an extension of the disease to the rats of the cities and consequently to the human population will exist. It may be one year, it may be five years, or it may be twenty years before this lighting up of the virulence of the infection will occur, but we can surmise from the world history of plague and from its known tendency to slumber in endemic foci, such as we have in the vicinity of San Francisco Bay, that this will happen some time. We have now had a fair trial of the present method, extending over ten years, which is to spend just enough money to keep the disease in check but not enough to exterminate it. The only rational plan is to proceed vigorously and to prosecute the work at such a rate that an entire ten years' allotment of funds is used up in a year or two. A reasonable basis would require an outlay of not less than two hundred and fifty thousand dollars per year with the expectation that two years would finish the work.

Child Hygiene.

The urgent need for the giving of special attention to the children in public health matters has been recognized by a number of states and larger cities by the inauguration of bureaus for the conduct of this work.

It remained for the results of the army medical examination to impress in a manner that can not be misunderstood the urgent need for early health supervision as a safeguard against the many preventable defects known to exist among the children of all ages.

The place to begin anything is at the beginning and no argument should be necessary to establish as a fact the importance of recognizing this as fundamental in the work of saving and prolonging life and bettering health and the consequent enjoyment of life. It has been said, and truthfully, that "the nation marches forward on the feet of little children." To begin at the beginning in public health work we must therefore go further back than the child in school—not that medical supervision of school children is not of vast importance. We must go further back than the child of pre-school age, although help extended to the mother in the rearing of her children is repaid a hundredfold in the increased health and vitality of the new generation. We must, in fact, go back beyond the period of infancy and recognize the supreme importance of prenatal instruction of mothers, and its marked influence upon the mortality, not only of the expected child, but of the expectant mother.

It is a very serious matter that the statistics of maternal mortality in the United States show a death rate from disease and conditions incident to childbirth for the age group of 15 to 44 years of 68.4 per hundred thousand. (Dublin, Amer. Jour. of Obs. and Dis. of Women and

Children, Vol. LXXVIII, No. 1, 1918.) This frightful mortality among the motherhood of America is comparable to the losses in figures of percentage of the American army in the trenches of France.

The preventable deaths among children under five years of age reach a figure far in excess of the mortality from wounds received by our soldiers in Europe. These statements will serve to draw attention to the urgent need of California taking steps to stem the tide of needless deaths by establishing under the State Board of Health a Bureau of Child Hygiene.

Such a bureau would disseminate information on prenatal care, through its own public health nurses and through the stimulus of local attention to such work which would surely follow the initiation of the work by the state. Educational literature on this and related subjects of infant care and feeding and the hygiene of the child of pre-school age would be distributed.

Better birth registration should and would be stimulated by the bureau. The employment by communities of public health nurses would, by example and demonstration of their possibilities for good, become common. The public health nurse is, next to the full-time and properly trained health officer, the most important agent in the efficient administration of public health in any community.

The influence of the bureau would be exercised in such matters as the local establishment and maintenance of infant welfare stations, the provision of nursing and obstetrical care for mothers; the establishment of summer camps for children; the holding of child welfare exhibits; the introduction of little mothers' classes into the schools; lectures to women, etc. These matters are all so intimately related to public health in general that work in child hygiene by the state can not be, without injury to the cause, placed under any department except the State Board of Health. Ten states have so far established bureaus of child hygiene, in each instance under the supervision of the state health department. New York City pioneered the way in this important work and the figures showing their results on the infantile death rate are interesting. The division was established in 1908, at which time the infant mortality rate was 144 per thousand living births per annum. In three years the rate had been reduced to 120, in two years more to 102, and in 1914 it was 94 per thousand.

The provision of a bureau of child hygiene by the legislature to be administered by the State Board of Health is an urgent necessity and will be a forward step calculated to keep California in the front rank of those states exhibiting an enlightened and progressive policy in public health affairs.

Smallpox.

A study of the chart on page 39 will show at a glance the fact that smallpox is on the increase in California. The chart shows by cumulative curves the rate of increase of the cases in 1918 (solid line) and the rate reduced to a yearly average for the years 1913 to 1917 (dotted line). The increased prevalence of smallpox is very striking and is a matter of concern to the board.

Smallpox is one of those diseases for which we possess the knowledge that would enable us to stamp it out entirely could we be permitted

to put into practice the measures that have proven to be effective. It is a curious commentary on the public health attitude of a portion of our citizenry that with those diseases, the mysteries of which have not yet been fathomed, we are criticized for not adopting stringent measures and thus stamping them out, while in the case of a disease, such as smallpox, where we have the means of stamping it out (vaccination) we are prevented from putting it into practice on a scale and in a manner that would have the desired effect. Indeed, we are sure to be subjected to harsh criticism if we attempt to strengthen the regulations governing its application. Increased prevalence of smallpox is undoubtedly due to the neglect of vaccination, which, in turn, is due to apathy and lack of familiarity with the disease which always follows a long period of comparative immunity. The insidious nature of the present extension of infection in the population of California is well exemplified by the following extracts from a report of one of our district health officers concerning his experiences with unrecognized cases in a group of towns in the Bay region:

"Upon request of the health officer of Napa to aid him in verifying a diagnosis of smallpox, I visited that city, saw the patient, and found him to be sick with a discreet smallpox of severe type. On questioning this man I learned that he had been in bed in the Vallejo General Hospital between the fifth and nineteenth of the month. Upon visiting the Vallejo General Hospital I found that during the period of residence of the Napa case in the hospital a patient had been admitted with a diagnosis of 'grippe,' but upon the subsidence of his fever he had developed a rash and the hospital authorities discharged him with a diagnosis of 'chickenpox.' This case exposed a number of people, as he was not recognized as a case of smallpox and did not consult a physician. Besides this man I found four people in the hospital sick with smallpox of a mild type, and one other person in the town, making a total of six cases in all discovered the first day. I immediately placed in force the usual smallpox regulations, obtained the assistance of the physicians of the town, and the physicians from the Naval Station at Mare Island and secured the vaccination of over one thousand previously unvaccinated children in the schools. Many hundred vaccinations were done by physicians in their private offices and as the original Vallejo case had been employed in one of the shops on Mare Island and had visited the island while the crustation was still active, the authorities there vaccinated several thousand of their workmen. Nine other cases ultimately developed in Vallejo, contacts of the men who walked the streets, or with the cases in the hospital before quarantine was established. The physician who attended the original Vallejo case, never having been vaccinated, developed a severe case of smallpox which was confluent on the face. Eight cases developed in Benicia, a neighboring town eight miles away, traced to Vallejo as the source. The epidemic here was handled by the local health officer in an energetic manner. I then visited Martinez, across the straits from Benicia, where I was informed by the health officer that although there was no smallpox present, there had been prevailing an odd type of chickenpox. None of these were in the active stage at that time, but he thought there were some cases still in Crockett, an adjoining town. Crockett was next visited and the result of my investigations

there disclosed the fact that mild cases of smallpox, which had been mistaken for chickenpox, had been occurring for some time. One case of smallpox in the pustular stage was found in the hotel, which had never been reported as smallpox. A visit to the schools disclosed three children in the classrooms in the crusting stage of smallpox. Many children in the schools showed pock marks and staining indicating a recent recovery from smallpox. Cases were discovered in ten houses in the town which were placed under quarantine. An active campaign of vaccination was immediately commenced, one hundred or more people in the hotel being vaccinated during the first two days. The employees of the sugar refinery, some fifteen hundred in number, were vaccinated, as were a large part of the school population, a total of about twenty-five hundred vaccinations in all being performed."

Other similar instances have been uncovered by the district health officers and there is no doubt that had we a larger force of district health officers at our disposal similar conditions would be found in many parts of the state. It is to be hoped that the intensive campaign against smallpox, which is now being carried on by the board, will result in a more complete vaccination of the population of the state, with a consequent reduction in the chances of infection from this wholly preventable disease.

Typhoid Fever.

A perusal of the report of the Director of the Bureau of Sanitary Engineering, which will be found in another part of this report, will show clearly the remarkable results that are being achieved in reducing to the irreducible minimum the prevalence of typhoid fever in the state. The loss to the community is not to be reckoned only in terms of loss of life. Typhoid is a long continued fever that incapacitates its victim for many weeks and occasions a burden of expense that can be ill borne by most of those attacked.

The director of the bureau, in his report, estimates that the reduction obtained during the period of four years since the organization of the bureau amounts to 280 deaths, 3,000 cases, and a monetary saving to the people who have been spared this infliction amounts to \$1,400,000. This reduction in the typhoid rate has been accomplished largely through the activities of the Bureau of Sanitary Engineering, which is at present handicapped by an insufficient appropriation. It is to be hoped that the next legislature will increase the present allowance of \$45,000 for the biennial period so as to permit of the employment of two additional engineers and one bacteriologist. The public funds can be invested in no more profitable manner than in the expansion of this most important department.

WILFRED H. KELLOGG, M. D.,
Secretary and Executive Officer.

REPORT OF THE BUREAU OF ADMINISTRATION.**WORK OF STATE DISTRICT HEALTH OFFICERS.****Northern District.**

HAROLD F. GRAY, Gr. P. H., District Health Officer, Chico.

Two hundred and two visits to towns have been made. There were 104 calls on local health officers, 41 calls on local registrars, 106 calls on other county and city officials, and 57 calls on physicians. No record was kept of the number of individual premises inspected within towns. Forty-seven special investigations of diseases were made, as well as 21 other special investigations, one complete municipal survey and two birth registration checks; 17 lectures and demonstrations were given, and there were 15 conferences with boards of supervisors, trustees, etc.

The first work undertaken was to cover the entire territory rapidly, to become acquainted with the local health officers, and become acquainted with the main problems of the district. An office system was then organized to make possible the follow-up of conditions in the district, with a minimum of clerical detail.

Considerable time has been given to organizing preventive and remedial measures against venereal disease, in co-operation with the Bureau of Social Hygiene.

Much attention has been given to improving birth and death registration; substantial improvement has been obtained in many communities.

A survey of the pollution of the upper Sacramento River was made in co-operation with the Bureau of Sanitary Engineering, and a public health survey has been made of Marysville. A birth registration check was made in Willows.

The principal work in the district has been, however, the instruction of local health officers in their duties, in the endeavor to bring about on their part more effective enforcement of health laws.

North Coast District.

ALLEN F. GILLIHAN, M.D., District Health Officer, Santa Rosa.

The district originally included eight counties: Del Norte, Humboldt, Mendocino, Lake, Napa, Sonoma, Solano and Marin. Trinity was added on September 20, 1917, and since that date the North Coast District has comprised these nine counties. With San Francisco Bay on the south, Oregon state line on the north, the Coast Range on the east, and the Pacific Ocean on the west, a narrow strip is formed about 300 miles in length by about 50 to 60 miles in width, which includes over 16,000 square miles of territory, and contains a population of about a quarter of a million. The largest cities are Santa Rosa and Eureka, each having a population of less than fifteen thousand. The general line of travel is north and south, either by Northwestern Pacific Railroad, or on coastwise steamers. Practically no communication is maintained with the counties to the east, the Coast Range serving as a barrier. The few roads across the mountains are very poor, and have very heavy grades.

DISTRICT HEALTH OFFICER.

As District Health Officer, I have endeavored to familiarize myself with conditions generally throughout the district, and especially with its health problems. I have visited every incorporated town, in some instances many times; I have visited nearly all the unincorporated settlements. I have made myself familiar with the geographic distribution of population; the watersheds and their relation to population and travel; the products, manufactures, and distribution of labor; and have visited a great many schools. I have made the acquaintance of health officers and local registrars throughout the district, and have assisted in solving many of their local problems. In personally visiting local health officers I have discovered many errors both of omission and commission, due, almost invariably, to misunderstanding regulations. These errors have been easily corrected, and the good will of the official retained, and later when other problems have arisen I have been called in to assist in their solution. As a result health officers in this district are now more prompt in forwarding their weekly reports, they pay closer attention to the immediate registration of all births, and are more active in reporting violations of state health laws.

INSTRUCTION TO HEALTH OFFICERS.

I have endeavored to visit each newly appointed health officer as soon after his appointment as I could conveniently do so, for the purpose of instructing him in the duties of his office. Besides health officers, I have visited town councils, school trustees, boards of supervisors and others, and a much closer co-operation has been established between these various officials and the different bureaus of the State Board of Health than could have been possible from a central office only.

HEALTH EDUCATION.

Many lectures have been delivered before schools, teachers' institutes, and the public generally, covering such subjects as communicable diseases and their control, the importance of complete birth registration, the conservation of infant and child life, and sanitation in rural communities. Much literature has been distributed after these lectures, particularly State Board of Health Bulletins.

SPECIAL INVESTIGATIONS.

Many special problems have been investigated; among the most important may be noted a sharp epidemic of diphtheria in Willits; typhoid on watershed of town of Elk, due to a carrier; 30 cases of chickenpox, German measles, and scarlet fever in Kelseyville; scarlet fever outbreak in Hopland; scarlet fever in Sonoma County; sanitation of summer camps along the Russian River; nuisance on Richardson's Bay due to waste from Mason Distillery; with Mrs. Tate-Thompson assisted in organizing five counties for joint sanitarium for care of tuberculous. In many instances co-operation with various bureaus has been of great value in obtaining results, for example, with the Bureau of Sanitary Engineering of State Board of Health, water supply of Santa Rosa, sewage disposal of Sonoma State Home at Eldridge, sewage disposal of Veterans' Home at Yountville, sewage disposal town of

Ukiah, water supply of Dillon's Beach Resort. In co-operation with the United States Shipping Board Emergency Fleet Corporation, State Housing Commission, and Bureau of Sanitary Engineering, the housing problem, the sanitation of food establishments, and the sewage disposal of the town of Benicia have occupied considerable attention.

CORRESPONDENCE.

Besides personal field investigation, much has been accomplished through office correspondence. Many letters have been written during the year to health officers, school trustees, town councils, physicians and private individuals, regarding the reporting of communicable disease, registration of individual births, violation of public health act and vital statistics law, enforcing common towel law, sterilization of drinking receptacles and other acts, the abatement of nuisances and many other problems.

Summary of Operations.

Incorporated towns visited	43
Number of visits made	123
Settlements and villages visited	23
Number of visits made	27
Miles traveled in automobile (10 months)	6,911
Special lectures and talks given	21
Grammar schools visited	19
High schools visited	7
Special investigations, communicable disease	24
Special investigations, sanitation and nuisances	29
Weekly reports filed	45
Special reports filed	50
Other interdepartmental communications	146
Letters, general correspondence	388
Circular letters to health officers, physicians, etc.	225

Central Coast District.

ROBERT N. HOYT, District Health Officer.

The sanitation of the zone surrounding Camp Fremont, thirty miles south of San Francisco, was one of the chief health problems in the Central Coast district. The Division Surgeon at the camp wished to know the number of cases of communicable diseases occurring from week to week in the towns and country districts in the vicinity and such reports were secured for him. In return he furnished reports of communicable diseases and the sources so far as known for all cases discovered among the troops.

The dairies supplying milk to Camp Fremont and the pasteurization plants were inspected and the conditions found reported to the Division Surgeon. In one case where unclean conditions at the dairy were found and the proprietor was unwilling to follow my recommendations, the milk was excluded by the camp authorities until the dairy was put into sanitary condition. At the request of the Division Surgeon, I took blood specimens from the men employed in the pasteurization plants in order to discover typhoid germ carriers. The blood tests were followed up with examination of excreta. No carriers were found. For several months complete sets of samples of milk were taken from the trucks while delivering in the camp and the analyses were reported to the Division Surgeon. There was evidently a general spirit of willingness

to make needed improvements on the part of those handling the camp milk.

The village of Menlo Park, at which Camp Fremont is located, is not incorporated and had no local health authorities. There was no system of garbage removal. With the building of the camp, there was a sudden influx of tradespeople. Restaurants, soda fountains and pool parlors sprung up by the dozen. The proprietors felt uncertain as to the permanency of the camp and started to do business without sufficient toilet or other sanitary facilities. The Division Surgeon agreed to joint inspections of food and other establishments and the co-operation of the army and State Board of Health secured sanitary conditions which might be copied with advantage by many cities. State Sanitary Inspector Edward Ross spent much time on this work and deserves much credit for the results. I arranged for regular garbage collections and obtained the assistance of two special deputy sheriffs in cleaning up the back yards and vacant lots.

The greatest need in health matters appeared to be for a public health nurse who could keep in touch with the school children and head off outbreaks of communicable diseases. Mrs. Nina Carson was appointed by the State Board of Health on June 15 to do this work. The county and local school authorities showed interest in the work and agreed to co-operate.

The venereal disease problem required much of my time. At Camp Fremont, I obtained the weekly reports of cases and sources of infection and co-operated with the camp authorities and the State Bureau of Social Hygiene in protective work for the soldiers. At times when special problems came up, I arranged for conferences of the state and county officials. In this way the methods of diagnosis and treatment of prostitutes convicted of plying their trade near Camp Fremont was arranged and the fitting out of a detention hospital at Redwood City hastened.

The surgeon at the Monterey Presidio complained of sources of infection affecting the men in his charge. The local officials secured the apprehension of a considerable number of prostitutes who were examined by an expert from the Bureau of Social Hygiene.

Many special problems required attention. At Alameda City a study of a scarlet fever outbreak showed the need for the employment of an inspector who could trace the sources of infection and supervise isolation and other control measures. The city health officer and the city manager appreciated the need and a very competent "health visitor" was secured through the good offices of Professor Force of the University of California.

A scarlet fever outbreak among the children in the school of the small town of Rodeo in Contra Costa County gave an opportunity to demonstrate modern methods of controlling this disease. The school trustees were persuaded to open the school and provide a public health nurse to follow up the examinations which the county health officer promised to make. Four light cases were discovered among the absentees from school and among those actually in attendance. In addition to controlling the outbreak a very interesting health survey of the children was made by the nurse. As a result many parents arranged to have dental or other care given their children.

The relation of sewage disposal to bathing in the San Lorenzo River in Santa Cruz County was studied. The data obtained was given to the Bureau of Sanitary Engineering of the State Board of Health.

At a summer resort (Twin Lakes) the faulty sewage disposal of a hotel and group of cottages was corrected.

In many other cases, I acted as connecting link between the experts of the State Bureau of Sanitary Engineering and local problems.

Requests for assistance came frequently from local health officers. Some health officers did not feel well enough equipped to handle epidemics or other problems but most often the need was for backing. The lot of a part-time health officer in a small community is hard. His actions are resented because of his personal relations with those with whom he deals. In many cases the mere word of a state official that certain sanitary action was necessary secured prompt compliance which had been refused the local health officer. A demand for vaccination of those exposed to smallpox was an example of this.

The improvement of local health organization is, to my mind, the greatest field for useful service of the state district health officers. Six men can do little of themselves in solving the state health problems. It is chiefly by building up a foundation of efficient town and county health work that we can secure the greatest results. In Alameda and Santa Clara counties, I assisted groups of towns and rural school districts in studying and planning for "local health districts" as provided for in the laws of 1917. In neither of these cases did successful formation of the district seem very certain but the interest in better health protection which was aroused will surely bear results. At the city of San Luis Obispo I spoke, with Miss Cole, superintendent of the Santa Barbara District Nursing Association, to an audience in the local moving picture theater on the value of a public health nurse. A committee was formed to secure an appropriation from the county for the employment of a county nurse.

Among the educational work which I was asked to perform, were papers at the State Conference of Municipalities at Santa Rosa and the State Conference of Social Agencies at Santa Barbara. I also gave illustrated talks on child hygiene at public schools, grange and improvement association meetings in Santa Clara County.

The State Board of Health recognized the need for more public health workers and gave me permission to assist Professor Force of the University of California in conducting a field course for advanced students in public hygiene. I was accordingly appointed Lecturer in Public Hygiene without pay by the university. Fifteen students were given instruction in the administration of public health work and were then supervised in making surveys of the health problems and health machinery in various cities and towns. In one case the student was added by the city she surveyed to its permanent health department.

Central District.

R. W. NAUSS, M.D., District Health Officer, Fresno.

The first six weeks following my report for duty as health officer for the Central District, were spent either at Berkeley or in Amador County, endeavoring to assist the newly-constituted Division of Biology (Bureau of Communicable Diseases) in the taking over and continuance

of our hookworm control work among miners. This relieved me of any direct personal responsibility for the conduct of field activities in the collection of diagnostic material and treatment of infected cases. I did, however, from time to time, during the year, aid various representatives of the Division of Biology in the planning for and conduct of the work.

The underground sanitation in ten mines was investigated in this connection and the Division of Biology was kept informed as to my findings as compared with the results of similar surveys made by myself last year.

On October 1, I established headquarters in the City Hall, Fresno, upon the gracious invitation of Mayor Toomey, secured through the kindly efforts of the newly-appointed city health officer, Dr. C. Mathewson. The three following months were largely devoted to making the acquaintance of my local health officers and familiarizing myself with the territory of the Central District. These first essentials were accomplished by means of systematic touring, during which time various matters which had already been referred to me, were inquired into or investigated as occasion required.

During the winter months, beginning with December, in addition to the more or less routine work in the office and field, considerable time was devoted to the creation of clinics in Fresno and Stockton, in which the venereal diseases could be adequately and effectively treated in accordance with regulation laid down by our board.

The Fresno Health Department, through the persistent activities of its health officer and others, succeeded in securing a special appropriation of \$3,000 for the equipment of a laboratory and clinic rooms in the City Hall and the salaries of a full-time bacteriologist and day and night nurses in addition. Thus far, our efforts in Stockton have not materialized completely. The local chapter of the Red Cross has definitely pledged \$1,000, providing the city trustees and county supervisors would each, as a body, give \$1,000. Owing to curtailment of city finances, resulting from decreased liquor revenues following the abolishment of saloons this year, the city trustees could not see their way clear to meet this offer of the Red Cross, but have definitely pledged themselves to make provision for an adequate appropriation when the new yearly budget shall be made up in December. The county supervisors appear to be willing to duplicate the appropriation to be made for this purpose by the city.

Advice and assistance were also, during the winter and early spring, given to the Women's Committee on Public Health, Kings County Council of Defense, in the furtherance of a systematic campaign directed specifically toward the establishment of a local health district, comprising the whole of Kings County. The petition, largely over-subscribed, was most ably presented to the county board of supervisors, the only dissenting voice raised being that of the incumbent county health officer. It may be said in this connection that local dissatisfaction over decisions of our board regarding the permissions granted to the municipalities of Reedley and Kingsburg, respecting the discharge into the Kings River of effluents from septic tanks, considered to be reasonably safe under the conditions imposed, was taken advantage of to defeat the object of the petition, both before the Hanford city trustees and the Kings County board of supervisors. It should, however, be remarked that the Women's Committee was disappointed but

not discouraged. The matter will probably be brought up again next year.

The importance of the reporting of births and communicable diseases was constantly emphasized and urged upon those personally responsible for doing the same. The children's year campaign is proving to be a great stimulus towards the improvement of birth registration. The objections of physicians regarding reporting generally, should, in my opinion, be more insistently emphasized.

Frequent calls for assistance from various parts of my district, in the differential diagnosis of German measles and scarlet fever on one hand and chickenpox and smallpox on the other, were responded to. The control of smallpox in Porterville was conducted under my direction. Control of the same disease among Indians in Madera County was also conducted under my personal supervision through a specially-appointed deputy county health officer. Failure in the control of diphtheria in and about San Andreas and Paloma, in Calaveras County, was investigated and difficulties arising therefrom adjusted.

Work done by our bureaus of Communicable Diseases and Engineering, in the control of the typhoid outbreak at Merced Falls, was followed up by a personal visit. Another outbreak of typhoid, consisting of six cases, occurring among student laborers on a ranch near Corcoran, Kings County, was investigated and the probable origin traced to what seemed to have been a carrier or ambulatory case, confirmation of which has not yet been secured. The perplexing question of endemic typhoid was, and is still, kept constantly in mind. Thus far my conclusion is that the insanitary privy, and the fly acting in partnership with a third party—the "typhoid carrier," are responsible for most of our rural endemic typhoid. Excellent means of transportation and the periodic demands for agricultural labor tend constantly to keep the labor element, much of which is foreign, moving from place to place. Too little attention is paid to this class of our population which is so extremely important in the control and prevention of spread of communicable diseases generally.

As soon as travel in the Sierras became practicable in May, a number of special mountain trips were made. Among these was a visit into the Yosemite Valley in order to acquaint myself with camp sanitation and possible stream pollution.

Special assistance was given our Registrar of Vital Statistics in the making of readjustments in the subdistricting of Fresno County. The practical working out of the new plan was inquired about at various places and a variety of opinions as to its practicability were given me. A great deal depends on the interest and pride in the work manifested by the local registrars.

South Coast District.

E. A. INGHAM, State Health Officer, Los Angeles.

Dr. Edwin D. Ward entered upon his duties as health officer for the South Coast District on August 1, 1917, and took charge of the establishment of the southern branch office of the State Board of Health. A considerable amount of work was done in connection with sanitary conditions surrounding the various military camps in the district and in connection with the control of communicable diseases in the neighborhood of these camps. A preliminary investigation of the mosquito

situation in the district between Long Beach and Wilmington was made and of the sanitation of canneries in the same district. Dr. Ward took an active part in the work for the establishment of an isolation hospital for venereal diseases in Los Angeles and co-operated with the Bureau of Venereal Diseases to a very large extent in making investigations and furnishing information in regard to the venereal disease situation throughout the district. He also made investigations of the reporting of vital statistics to the local registrars and worked to stimulate the complete reporting of births to these local authorities. Some time was spent in work for the formation of local health districts around Pomona, Pasadena, Santa Ana, San Diego and Santa Barbara. These districts have not yet been organized on account of local jealousies and on account of the difficulty of obtaining suitably trained health officers at the present time. Dr. Ward co-operated with the various health officers in investigations of sanitary conditions which could not be satisfactorily handled by the local authorities. He also assisted the local health officers in suspected cases of contagious diseases. The following epidemics were investigated:

Typhoid: Hollywood and Santa Paula.

Diphtheria: San Dimas and Venice.

Smallpox: Nordhoff.

Meningitis: San Diego.

On April 1, 1918, Dr. Ward resigned and Mr. E. A. Ingham, health officer of the Southern District, was placed in charge of the South Coast District. Mr. Ingham transferred his headquarters to Los Angeles on May 1, but remained in charge of the Southern District until June 12. Among the work which he took up were the investigation of an epidemic of diphtheria at Huntington Park which resulted from an infected milk supply. The investigation of an outbreak of dysentery at Santa Ana and of typhoid at National City was also made. Routine visits were made to a considerable number of cities in the district with a view to the compilation of data in regard to public health conditions. During the eleven months from August 1, 1917, to June 30, 1918, thirty-four cities were visited by the district health officer.

Southern District.

E. A. INGHAM, State Health Officer, Los Angeles.

From August 1 to September 15 the Southern District was under the supervision of Dr. E. D. Ward, Health Officer of the South Coast District. During this period investigations were made of a case of typhus reported at Perris and of a small outbreak of typhoid near Hemet.

On September 15 I took up the duties of state health officer for the Southern District, but owing to the lack of office facilities at Riverside the headquarters for this district remained at Los Angeles until December 1, when it was moved to the Riverside County Courthouse. Following the resignation of Dr. Ward on April 1, 1918, I was transferred to the South Coast District and on May 1 moved my headquarters to Los Angeles, but remained in charge of the Southern District until the work there was taken over by Dr. Telfer on June 12.

In taking up the work it was necessary to devote a considerable amount of time to studying general conditions in the district and to becoming acquainted with the local health authorities in order that it might be possible to devote particular attention to the places which were in the worst condition and especially to those which seemed capable of improvement if their energies were properly directed. For this reason a considerable amount of time was spent in the collection and compilation of data on health conditions and health administration in the district.

If appears that one of the main functions, if not the chief function, of a district health officer, is the stimulation and education of the local health authorities to the point where they can handle local conditions properly without appealing to the state for aid. Coupled with this must be the education of the public at large to the point where they will appropriate enough money to properly support the work. For this reason much time has been devoted to making the acquaintance of municipal authorities, practicing physicians, and various persons who were especially interested in public health; and in the preparation of articles for publication in local newspapers.

In addition it has been necessary to spend some time in the investigation and control of epidemics and in the control of nuisances in the Southern District. Following is a summary of the work done during the nine months from September 15, 1917, to June 12, 1918: Cities visited, 22 out of 29 in the district. Surveys: Blythe, general sanitary; San Bernardino, hygiene and sanitation of schools; Hemet, contagious disease situation in the schools; Riverside, contagious disease situation in the schools. Epidemics investigated: typhoid—Blythe, Palo Verde Valley, Hemet; smallpox—Brawley, Blythe, Ontario; dysentery—Colton. Public addresses: County Medical societies of Kern, Riverside and Imperial counties; Southern California Organization of Public Health Nurses; Riverside Women's Clubs; State Council of Social Agencies; State Conference of Health Officers.

In addition I have co-operated with various bureaus and state officials, where we could be of mutual service to each other, as follows:

Bureau of Communicable Diseases in supervising the establishment and proper maintenance of depositories for diagnostic outfits; Epidemiologist in investigations of typhoid at Blythe and smallpox at Ontario; Consulting Parasitologist with advice on proposed mosquito abatement district at Riverside; Bureau of Tuberculosis in connection with hospital facilities in Riverside County and Imperial County; Bureau of Venereal Disease with investigations of conditions in Imperial County, investigation at Blythe, and arrangements for the introduction of their work at Riverside; minor reports issued on venereal disease situation in Bakersfield, San Bernardino, Colton, Elsinore and Perris; Bureau of Vital Statistics in formation of local registration districts in Riverside County; Bureau of Sanitary Engineering in reports on conditions at Blythe, Riverside, Cabazon, Hemet and March Field. I have further co-operated with the Commission on Immigration and Housing in regard to matters of camp sanitation at canneries and elsewhere and with the nurses of the State Board of Control in their work along the line of children's aid.

SANITARY INSPECTIONS.

For the Biennial Period From July 1, 1916, to June 30, 1918.

EDWARD T. ROSS, State Sanitary Inspector.

During the biennial period ending June 30, 1918, a number of sanitary surveys were made of cities and towns throughout the state. These surveys covered the inspection of food supply places, restaurants, ice cream and soft drink stands, creameries and dairies, meat markets, slaughterhouses, hotels, lodging houses, factories, canneries, meat and fish packing houses, stables, public schools, hospitals, sanitariums, theaters, laundries, barber shops, etc. In a number of cases the water supplies and sewerage systems were also inspected. Sanitary surveys were also made of a number of summer resorts, farm camps, and of all ferry and river steamers plying between San Francisco and bay and river points. Three campaigns were undertaken for the control of typhoid fever, rabies and malaria. Extensive clean-up operations were undertaken in the extra cantonment zone at Camp Fremont and in the territory surrounding the shipbuilding yards in Los Angeles and Long Beach. As a result of these operations over 14,800 inspections and reinspections of premises were made and over 10,470 nuisances were abated.

During the month of August, 1916, a campaign was waged in the West Side-Sunset oil fields, Kern County, to prevent the spread of typhoid fever. The area covered during this campaign was approximately 12 miles wide and 24 miles long, including the towns of Maricopa, Taft, Fellows, McKittrick and all camps and leases. The fullest co-operation was received from the county board of supervisors, also from the boards of trustees of the various towns and from the citizens in general in carrying on the work.

Summary of Operations.

Inspections and reinspections.....	4,418
Nuisances abated	6,365
New garbage cans procured.....	1,055
Yards cleaned	1,571
Vacant lots cleaned.....	301
Streets and alleyways cleaned (approximate blocks)	105
Loads of rubbish removed.....	798
Toilets screened and made fly-tight.....	2,125
Old toilets demolished.....	243
New toilets provided.....	223
New toilet vaults provided.....	506
Old toilet vaults filled in.....	440
New cesspools provided.....	21
Garbage burners installed.....	148
Chicken yards cleaned.....	53
Stables cleaned	34
Bunkhouses cleaned	58
Cookhouses screened	6
Notices served	281
Water samples collected (found O. K.).....	9
Miscellaneous nuisances abated.....	96

SUMMER RESORTS.

Over 60 summer resorts located in various parts of the state were inspected. Insanitary conditions were found to exist in practically all of them, due to accumulations of garbage, rubbish, manure, etc., forming breeding places for flies. In a number of instances the sewage was discharging into lakes or mountain streams. A later inspection made of these resorts, showed that practically all improvements recommended had been made and that over 300 nuisances were abated.

FARM CAMPS.

During the months of January and February, 1917, over 70 farm camps located in the delta region west of Stockton were inspected. Numerous insanitary conditions were found in all camps visited, due in the majority of cases to the dilapidated and filthy condition of out-houses and accumulations of garbage and filth. Instructions were given the owners for the abatement of all nuisances existing in their premises. A later inspection made of a number of these camps showed that numerous improvements had been made, resulting in the abatement of over 350 nuisances.

FERRYBOATS AND RIVER STEAMERS.

In the month of April, 1917, all ferry steamers plying between San Francisco, Oakland, Alameda, Richmond, Tiburon and Sausalito, and all river steamers plying between San Francisco, Sacramento, Stockton and up-river points were inspected. The ferry steamers in general were found to be in excellent sanitary condition. On a number of the river steamers the crew's mess space, galley and toilets were not properly enclosed or screened against flies, and in many instances the crew's forecastles were lacking in proper light and ventilation and the wooden bunks were in dilapidated condition. The owners of these steamers willingly complied with recommendations made for the improvement of sanitary conditions. A reinspection of these steamers showed that the crew's mess spaces, galleys and toilets had been screened, sanitary drinking fountains or individual paper cups provided, crew's forecastles cleaned and ventilated and steel bunks installed. Over 200 nuisances were abated.

Summary of Operations.

Ferry steamers inspected.....	21
River steamers inspected.....	36
Crew's mess spaces screened.....	43
Galleys screened.....	31
Toilets screened.....	39
Sanitary drinking fountains installed.....	37
Crew's forecastle cleaned and ventilated.....	18
Steel bunks installed.....	60
Nuisances abated.....	210

RABIES CAMPAIGN.

During the later part of 1916, rabies were reported to be prevalent in various parts of Siskiyou County. An investigation was made in February, 1917, in order to ascertain the extent of the territory involved. The investigation showed that 10 positive cases of rabies

as well as a number of suspected cases had occurred in the county within a few months previous to the time of the investigation. At the request of the local authorities and as a result of the investigation, the State Board of Health placed a quarantine on the county. A campaign was organized and waged under the direction of the sanitary inspector, against the spread of the disease. The board of supervisors of the county passed an ordinance requiring a license to be paid on all dogs in the county, and another ordinance authorizing the payment of \$2.50 on each coyote scalp taken in the county. They also authorized the county health officer to employ five deputies to assist in the enforcement of the quarantine regulations and the extermination of coyotes; also to purchase poison for the extermination of coyotes and for free distribution to responsible citizens who desired to assist in the work by placing the same about their ranches and cattle ranges. The United States Biological Survey Service, at our request, placed one foreman and five trappers with equipment in the field. Invaluable assistance was received from the United States Forest Service in distributing poison, and control work.

Summary of Operations.

Premises visited first inspection.....	1,950
Premises visited second inspection.....	2,338
Premises visited third inspection.....	2,760
Number of dogs killed to August 1, 1917.....	523
Number of cats killed to August 1, 1917.....	63
Number of coyotes and other animals killed to July, 1917.....	159
Number of poison baits placed.....	10,000
Number of ounces poison used.....	65
Positive cases rabies (laboratory examination).....	11
Suspected cases rabies.....	33
Brains sent to laboratory.....	21
Negative cases (laboratory examination).....	10
Men employed—state 1, county 5, biological survey 5.....	11
All employees of the United States Forest Service stationed in the county assisted in the work.	

In the month of April, 1917, an investigation of the rabies situation in Shasta County was undertaken. It was learned that but three positive cases of rabies had occurred in the county during the previous year. As a precautionary measure the board of supervisors passed an ordinance requiring a license to be paid on all dogs kept in the county, and the destruction of all dogs not wearing a license tag.

MOSQUITO ABATEMENT DISTRICT.

During the month of May, 1917, mosquito abatement work was started in the Los Molinos Mosquito Abatement District. Public meetings were held and the citizens were visited in their homes, for the purpose of explaining to them the best methods to be employed in preventing the spread of malaria and the extermination of mosquitoes. The meetings were largely attended and the citizens expressed great interest in the plans outlined for the control work. Practically all of the citizens present at the meetings volunteered at least one day's work, constructing ditches, draining pools, etc., the men providing teams and implements, and the women providing lunches for the workers. Excellent results were obtained by this co-operative work.

Summary of Operations.

Public meetings held.....	12
Inspections made.....	520
Pools of water oiled (approximately 1,260,000 square feet).....	670
Gallons of oil used.....	1,800
Permanent ditching of spillways (approximate miles).....	24
Nuisances abated.....	670

Practically all irrigating ditches in the district have been cleaned and placed in good condition.

The period from September 1 to October 31, 1917, was taken up with exhibits of the State Board of Health. During the first part of September the exhibit was at the California State Fair in Sacramento and during the later part of the month was moved to Santa Rosa, for the meeting of the League of California Municipalities. From October 13 to 28 the exhibit was at the Land Show in San Francisco. Thousands of people visited the exhibit and thousands of pieces of literature were distributed. The exhibit was given the blue ribbon at the Land Show.

CAMP FREMONT.

During the months of March, April and May, 1918, a general clean-up of the territory surrounding Camp Fremont was undertaken. Sanitary surveys were made of Menlo Park, Redwood City, San Mateo, Palo Alto, Mayfield, Santa Clara, Mountain View, and San Jose. These surveys covered the inspection of food supply places, restaurants, cafeterias, soft drink and ice cream stands, fruit and vegetable markets, bakeries, grocery stores, creameries, dairies, meat markets, hotels, barber shops, etc. Copies of the state laws and regulations were given to the owners of the various places visited, and without exception all complied with the same. At the time reinspections were made of these places a medical officer from the Division Surgeon's office at Camp Fremont was present; and issued a sanitary certificate to the owners. This certificate indicates that the establishment is approved by the army authorities and permits men in uniform to patronize the place. A number of domestic and business premises in the rural districts were also inspected, and instructions given for the removal of accumulations of manure, garbage, rubbish, etc., in order to eliminate fly-breeding places. In every instance these instructions were willingly complied with. The military authorities at Camp Fremont, also the various city and county officials and the citizens in general co-operated in every way possible in the work.

Summary of Operations (Incomplete).

Sanitary surveys (cities).....	8
Premises inspected.....	654
Reinspections made.....	794
Nuisances abated.....	1,502
Food supply places complied with state laws.....	353
Barber shops, etc., complied with state laws.....	157
Facilities for sterilizing razors installed.....	123
Facilities for sterilizing glasses in restaurants, ice cream and soft drink stands, etc.....	282
Washing facilities provided (food supply places).....	278
Metal screened or glass food containers installed.....	436
Doors and windows screened.....	852
New floors installed (food supply places).....	20

New toilets installed.....	17
Toilets screened and made fly-tight.....	243
Metal garbage receptacles installed.....	391
Insanitary wooden sinks removed.....	76
Metal sinks installed.....	84
Food delivery wagons enclosed.....	30
Food supply places, entire fronts screened or enclosed with glass.....	15
Closets provided for clothes of employees, in food supply places.....	248
Yards cleaned.....	148
Certificates issued (army), food supply places, etc.....	510

SHIPBUILDING YARDS AND ADJOINING TERRITORY.

In the month of June, 1918, sanitary surveys were made of three shipbuilding yards and all food supply places, etc., located in the territory surrounding the same. Two of the shipyards are located in Los Angeles and one in Long Beach. Insanitary conditions were found in all of the shipyards, caused by lack of proper toilet facilities. Improvements will be made at the earliest possible date. Over 50 food supply places, restaurants, ice cream and soft drink stands in the vicinity of the shipyards were inspected. Practically all of these establishments were being operated in small, open wooden shacks, with no effort made to protect foodstuffs from contamination. No plumbing facilities were provided and the yards surrounding the shacks were practically covered with accumulations of garbage and filth. The swarms of flies about these accumulations had free access to the foods, etc., being prepared and served to men employed in the shipyards. Copies of the state laws and regulations were given to the owners, and without exception were complied with. Doors and windows were screened, plumbing facilities installed, facilities for sterilizing glasses, etc., provided, yards cleaned, and covered metal receptacles procured for all garbage, rubbish, etc. A number of fish canneries and packing houses, located in the vicinity of the shipyards, were also inspected. The majority were unscreened and in many of them fly-breeding places were found. The owners willingly complied with recommendations made for the improvement of sanitary conditions. Windows were screened, yards cleaned and covered receptacles provided for all waste matter.

Summary of Operations.

Shipbuilding plants inspected.....	3
Premises inspected (food supply, etc.).....	53
Fish canneries and packing houses.....	23
Miscellaneous premises inspected.....	80
Reinspections made.....	243
Nuisances abated.....	240
Food supply places complied with state law.....	49
Fish canneries complied with state laws.....	21
Facilities for sterilizing glasses, etc., installed.....	33
Metal screened or glass food containers installed.....	51
Doors and windows screened.....	438
New toilets installed.....	31
Toilets screened and made fly-tight.....	78
Metal garbage receptacles provided.....	117
Premises cleaned, yards, etc.....	61

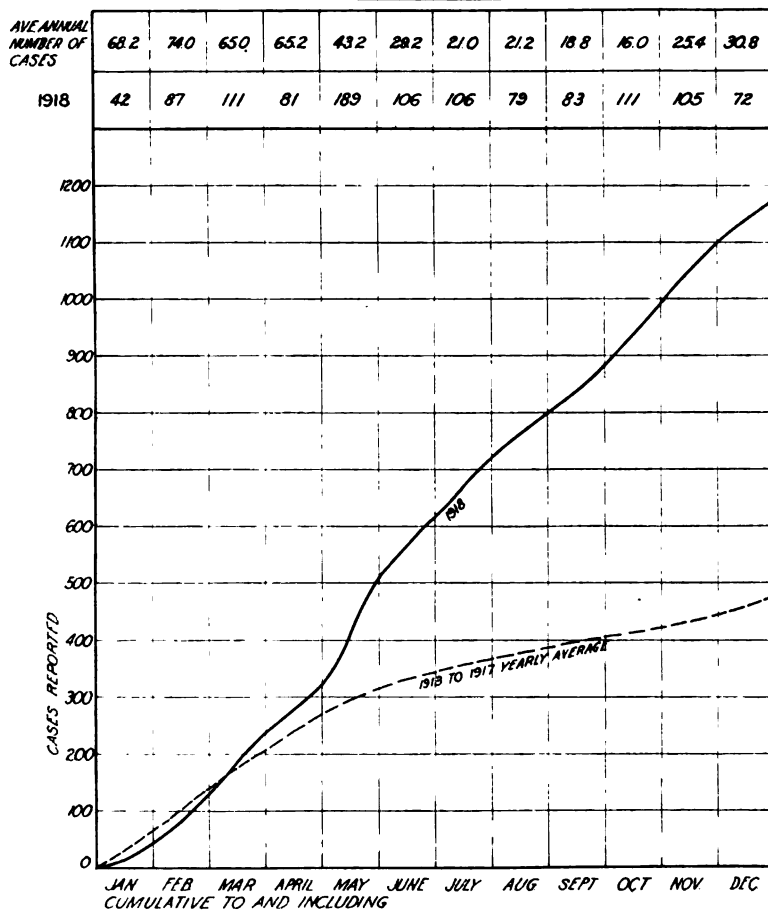
A large area of marsh land in the regions of the shipyards was inspected for mosquito breeding places, and measures were instituted

for mosquito control work. As a result of this work, over two and one-half miles of ditching, and a large amount of oiling was accomplished, which abated the serious mosquito menace to the shipyards.

Summary of Miscellaneous Operations.

	1917	1918	Total
Investigations--			
Rabies	2	3	5
Typhoid fever	1	2	3
Smallpox		1	1
Venereal disease conditions		16	16
Mosquito	1	3	4
Houseboats, above water supplies		4	4
Sanitary surveys (cities and towns)	10	9	19
Public camp grounds inspected	5	3	8
Water supplies inspected	3	20	23
Sewage disposal systems inspected	10	23	33
Water samples collected		31	31
Railway trains inspected	22		22
Canneries (fruit, meat, fish)	6	29	35
Reduction plants inspected	2	4	6
Slaughterhouses inspected	7	8	15
Dairies and creameries inspected	13	10	23
Food supply places inspected	213	453	666
Laundries inspected	10	16	26
Public schools inspected	15	16	31
Hospitals inspected	2	3	5
Bathhouses and swimming pools inspected		14	14
Jails inspected	1		1
Miscellaneous premises inspected	315	604	919
Sanitary reports submitted	157	141	298
Nuisances abated	404	602	1,006

SMALLPOX MORBIDITY FOR CALIFORNIA



FINANCIAL

Biennial Period July 1, 1916, to June 30, 1918

Name of appropriation	Salaries	Office expense	General expense
1. Antirabic Virus	\$1,490 90		\$438 14
2. Cold Storage	1,050 00		
	2,635 80		43 33
	3,619 55		178 00
3. Contagious Disease	6,355 41		221 93
4. District Health Officers	15,750 55	\$27 01	410 50
5. Social Hygiene	10,478 23	33 40	925 02
	14,490 22	57 78	783 20
	15,820 50	7 83	1,130 28
6. Hygienic Laboratory	30,316 81	65 61	1,916 46
	5,404 13		
	6,484 52		199 26
7. Nurses' Registration Fund	11,888 65		188 26
8. Printing			
	20,866 73	126 80	1,152 13
	23,351 49	254 47	1,054 90
9. Pure Food and Drugs	43,218 22	391 36	2,307 03
	11,772 87	85 07	720 54
	15,473 49	11 00	802 28
10. Sanitary Engineering	27,240 36	90 67	1,591 92
	3,028 58	408 24	259 03
	10,785 95	105 23	358 77
11. Travelling and Contingent	18,814 53	508 46	617 80
	5,554 06	28 06	350 83
	7,624 50	15 50	312 77
12. Tuberculosis	13,178 16	44 46	603 60
13. Stenographer	2,400 00		
Totals	\$182,063 88	\$1,165 97	\$9,180 75

STATEMENT.

—Sixty-eighth and Sixty-ninth Fiscal Years.

Postage	Telephone and telegraph	Travelling	Chemicals	Animals	Printing and stationery	Bulletin
\$168 00				\$168 55		
60 00		\$511 50			\$6 48	
		2,312 78			1,298 88	
		2,401 08			1,288 00	
		4,714 44			2,572 48	
147 02		4,719 56			580 08	
201 24		3,182 58				
244 38		1,517 77	110 96	132 20	311 08	
535 50		1,073 86	183 86	136 02	688 58	
779 86		2,561 63	294 32	298 22	994 61	
312 00		1,052 69			1,053 04	
630 00		1,355 86			1,288 27	
\$942 00		\$2,408 55			\$2,386 31	
					421 37	\$3,590 44
					2,900 74	2,642 48
					2,622 11	6,222 87
325 00		5,345 18	542 77		1,895 18	
326 70		5,694 55	503 09		439 66	
651 70		11,089 73	1,045 86		2,334 88	
136 00		1,728 01	185 88		471 41	
259 56		1,904 26	139 54		456 49	
395 56		3,632 27	324 92		927 90	
1,569 87	\$861 32	3,246 92			1,261 51	
2,148 80	835 10	2,753 95				
3,718 67	1,786 51	6,000 87			1,261 51	
380 00		1,803 03			1,751 09	
562 58		2,104 30			1,250 43	
922 58		3,907 33			3,001 51	
\$7,961 63	\$786 51	\$42,658 46	\$1,065 10	\$436 77	\$16,637 77	\$6,222 87

REPORT OF THE STATE BOARD OF HEALTH.

FINANCIAL STATE				
Biennial Period July 1, 1916, to June 30, 1918				
Name of appropriation	Binding	Equipment	Automobile expense	Squirrel extermination
1. Antirabic Virus				
2. Cold Storage				
			\$1,301 00	\$11,677 48
			2,491 80	19,546 30
3. Contagious Disease			3,798 49	30,223 87
4. District Health Offices		\$3,767 41	230 61	
5. Social Hygiene		1,414 44		
		426 75	114 34	
		4,064 50		
6. Hygienic Laboratory		4,510 25	114 34	
		318 27		
7. Nurses' Registration Fund		318 27		
	\$302 65			
	111 32			
8. Printing	503 97			
		3,933 70	551 83	
		1,750 14	1,304 03	
9. Pure Food and Drugs		5,683 84	1,855 86	
		1,614 74	870 65	
		2,445 71	1,478 05	
10. Sanitary Engineering		4,091 45	2,348 70	
		874 56	821 75	
			456 94	
11. Traveling and Contingent		874 56	1,278 69	
12. Tuberculosis				
13. Stenographer				
Totals	\$301 97	\$20,630 22	\$9,621 08	\$30,223 87

MENT—Continued.

—Sixty-eighth and Sixty-ninth Fiscal Years.

Advertising	Rent in Los Angeles	Miscellaneous	Ophthalmia neonatorum	Arseno benzol	Tuberculosis subsides	Totals
		\$91 02				\$2,350 67
		48 08				1,676 01
		1,708 92				20,938 80
		2,180 56				30,702 25
		\$3,899 48				151,671 05
		103 08				125,741 90
		1,128 22		\$3,906 50		121,278 63
		439 69				18,027 34
		1,045 11				24,706 56
		1,484 79				143,336 90
\$41 02		337 29				8,200 77
75 07		30 49				10,365 74
116 09		367 78				118,593 51
						4,394 46
						4,954 49
						9,248 95
	\$162 00	1,196 25				36,107 03
	38 83	1,099 23				34,806 08
	200 83	2,286 48				170,915 74
		186 52				17,810 79
		39 53				23,071 01
		229 05				40,881 80
		4,579 98				19,800 64
		1,398 06				20,979 85
		5,198 80				40,840 49
		395 57			\$17,870 78	28,114 92
		958 86			49,078 63	61,907 56
		1,354 43			66,949 41	90,022 48
						2,400 00
\$116 09	\$200 83	\$16,958 25		\$3,909 50	\$18,940 41	\$419,031 13

FINANCIAL STATE			
Biennial Period July 1, 1916, to June 30, 1918			
Name of appropriation	Established	Reverting to General Fund, June 30, 1917	Chapter, 1917
1. Antirabic Virus	Chapter 391, 1913.....	\$1354 79	1915
2. Cold Storage	Chapter 390, 1913.....	105 78	1915
3. Contagious Disease	Chapter 218, 1908.....		424
4. District Health Offices.....	Chapter 358, 1917.....		358
5. Social Hygiene	Emergency, 1917		
6. Hygienic Laboratory	Chapter 223, 1905.....	449 50	358
7. Nurses' Registration	Chapter 319, 1913.....		51
8. Printing	1899		358
9. Pure Food and Drugs.....	Foods, Ch. 181; Drugs, Ch. 181-183, 1907; Ch. 104, 1909	3,002 18	358
10. Sanitary Engineering	Ch. 373; Ch. 478-649, 1915.....		317
11. Traveling and Contingent.....	1870	3,882 02	358
12. Tuberculosis	Ch. 242-591, 1909; Ch. 776, 1915		423
13. Stenographer	Chapter 680, 1913.....		358
Totals		\$7,944 27	

Reverted amounts to be deducted from balances shown

MENT—Continued.

—Sixty-eighth and Sixty-ninth Fiscal Years.

Amount of appropriation	Amount brought forward	Received from other sources	Total	Expenditures		Balances
				1916-17	1917-18	
	\$2,706 46		\$2,706 46	\$2,350 67		\$354 79
Fees	181 79	\$1,630 00	1,841 79	1,676 01		165 78
		3,186 72				
		1,311 19				
\$75,000 00	22,066 41	4,490 91	101,566 32	20,908 80	30,702 25	49,805 27
55,000 00	New		55,000 00		25,741 90	29,258 10
60,000 00			60,000 00		21,278 63	38,721 37
55,000 00	19,076 84		74,076 84	18,627 34	24,709 56	30,739 94
		3,708 36				
		8,070 00				
Fees	38,300 17	11,778 38	50,078 58	8,200 77	10,365 74	31,512 02
10,000 00	4,394 46		14,394 46	4,394 46	4,054 49	5,045 51
		2,126 20				
		3,835 95				
65,000 00	37,073 64	5,902 15	108,085 79	36,107 66	34,808 08	37,120 05
45,000 00	18,490 08	79 55	63,569 63	17,810 79	23,071 01	22,687 83
		1,273 74				
		7,826 38				
38,880 00	22,466 02	9,100 12	70,449 04	19,860 64	20,979 85	29,608 55
125,000 00	69,054 84		194,054 84	28,114 92	61,807 56	104,082 36
2,400 00	1,200 00		3,600 00	1,200 00	1,200 00	1,200 00
\$531,280 00	\$285,012 61	\$33,080 00	\$799,372 70	\$159,312 06	\$259,719 07	\$380,341 57

MORBIDITY REPORTS.

The reporting of cases of communicable diseases has improved year by year in California. It is only when the health officers report regularly, regardless of whether there have been any cases of communicable diseases, that we are able to always ascertain local health conditions and have complete records. A marked improvement has been shown in reporting cases of scarlet fever, malaria, smallpox and typhoid fever. The increase in the number of cases of venereal diseases is attributed to improved reporting on the part of physicians, and the great number of new cases discovered by army physicians which have come to light when the men reached the training camps. The year 1918, statistics for which are not included in this report, indicates still better reporting on the part of physicians and health officers.

In 1915 there were 36,952 cases of communicable diseases reported to the State Board of Health, as required by law.

In 1916 there were 36,358 cases of communicable diseases. The reason for this decrease was a marked drop in the number of cases of communicable disease, and not through laxity on the part of health officers in reporting. In 1917, there were no less than 65,134 cases reported, almost twice as many as during the preceding year. While it is still too early to estimate with any degree of accuracy how much the reporting of cases of communicable diseases has increased the total number of morbidity reports for the year 1918, the results thus far indicate that the total number of cases reported will be far greater than in any preceding year. This growth can be attributed to an increase in the number of cases of disease and more efficient reporting on the part of physicians and health officers.

While there has been a marked decrease in the number of cases of malaria reported during 1917, this is no indication that there are fewer cases of this disease, but physicians are lax in reporting these cases to health officers. The old adage of "an ounce of prevention is worth a pound of cure" was never more applicable than in dealing with the malaria situation. However, this ounce of prevention can not be applied unless we have knowledge that the evil exists. The economic loss resulting from malaria is enormous, but no definite figures can be obtained on account of the small proportion of cases of this disease which have been reported. When physicians and health officers will give the same attention to the reporting of malaria that is given to other diseases, greater progress can be made in checking this disease.

The general improvement in reporting is indicated in the following table:

Number of Cases and Deaths from Certain Diseases Reported During 1915, 1916 and 1917.

Diseases	1915		1916		1917	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Diphtheria	3,660	311	3,302	280	2,575	207
Leprosy	12	—	13	—	21	6
Malaria	522	49	946	54	750	47
Measles	13,114	128	4,368	41	22,021	188
Meningitis (epidemic cerebrospinal)	46	22	64	15	133	31
Poliomyelitis (acute infectious)	62	19	145	24	60	26
Rabies	3	3	1	1	—	—
Rocky Mountain spotted fever	11	—	10	—	—	—
Scarlet fever	2,896	53	3,894	34	4,514	49
Smallpox	336	3	248	12	329	13
Tuberculosis	6,213	5,551	6,980	5,267	6,962	5,457
Typhoid fever	1,150	276	1,204	208	1,429	225
Gonorrhea	606	6	1,083	6	3,006	11
Syphilis	612	243	1,536	270	1,797	298

GROUP I. COMMUNICABLE DISEASES.
Number of Cases and Deaths During 1916, by Months.

	January		February		March		April		May		June	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Diphtheria	336	24	265	23	385	27	231	27	354	33	320	27
Leprosy	—	—	2	—	—	—	—	—	—	—	1	—
Malaria	2	—	14	6	49	1	22	4	114	3	48	5
Measles	252	4	380	2	702	4	491	6	447	3	293	6
Meningitis (epidemic cerebro)	10	1	4	—	6	—	2	—	9	6	2	1
Poliomyelitis	4	2	6	2	1	—	3	—	2	1	4	1
Rabies	—	—	—	—	—	—	—	—	1	1	—	—
Rocky Mountain spotted fever	—	—	—	—	—	—	—	—	1	—	9	—
Scarlet fever	368	2	369	2	410	5	326	2	393	3	187	3
Smallpox	22	1	63	—	34	—	20	3	18	—	5	—
Tuberculosis	601	566	566	492	838	492	483	455	644	453	473	406
Typhoid fever	55	11	49	13	68	16	60	14	121	16	143	21

GROUP I. COMMUNICABLE DISEASES.

Number of Cases and Deaths During 1916, by Months—Continued.

	July		August		September		October		November		December		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Diphtheria	183	26	198	21	154	19	150	21	322	16	286	26	3,202	280
Leprosy	3		2		2				1		2		13	
Malaria	114	10	107	2	190	10	109	9	85	2	23	2	946	54
Measles	225	7	106	2	175	1	108	1	406	4	494	1	4,268	41
Meningitis (epidemic cerebrospinal)	7		9	2	2	2	3	1	3		7	2	64	15
Poliomyelitis	12	1	19	3	19	4	26	3	28	4	21	3	145	24
Rabies													1	1
Rocky Mountain spotted fever													10	
Scarlet fever	149	4	178	1	196	1	347	2	550	3	401	5	3,894	34
Smallpox	17	1	12	1	13	2	6	1	22	2	10	1	942	13
Tuberculosis	408	396	647	369	618	346	548	375	637	406	517	513	6,980	5,367
Typhoid fever	133	25	170	16	132	28	85	19	91	13	97	10	1,304	208

GROUP II. COMMUNICABLE DISEASES.

Number of Cases Reported During 1916, by Months.

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Anthrax		1				2		3	4	2		1	13
Beri-beri			1	1			1	1		1			5
Chickenpox	373	411	799	429	538	363	152	106	145	160	480	445	4,401
Dysentery		1	4	4	2	3	1	14	1	2	9	2	43
Erysipelas	36	26	29	46	55	36	24	27	23	16	58	39	408
German measles	2	3	6	11	2	2	2	3	7	2	10	3	53
Gonococcus infection	266	95	88	52	80	34	77	94	87	59	93	49	1,063
Hookworm					1		1				1		3
Leprosy		2				1	3	2	2		1	2	12
Mumps	122	140	440	308	425	187	60	101	185	235	435	337	2,975
Pellagra		1	3	2	7			1				1	15
Plague													
Pneumonia	196	134	145	124	157	90	68	73	60	96	221	297	1,689
Syphilis	240	103	128	102	127	99	118	114	99	159	134	113	1,536
Tetanus		4	3	1	2	3	7	7	3	2	1	2	35
Trachoma	21	10	7	2	20	4	9	6	9	9	8	15	121
Whooping cough	118	175	511	510	624	318	214	153	89	72	127	75	2,986
Typhus fever						1	3	2	16	4	2		26

GROUP I. COMMUNICABLE DISEASES.
Number of Cases and Deaths During 1917, by Months.

	January		February		March		April		May		June	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Diphtheria	354	17	316	21	196	15	150	22	229	16	126	13
Leprosy	2		3	1	3				3	1	1	2
Malaria	15		17		24	1	39	1	38	3	55	2
Measles	1,635	5	3,120	24	3,868	30	4,444	29	4,067	37	1,719	31
Meningitis (epidemic cerebro-spinal)	9	3	4	3	6	1	11	4	6	3	14	5
Polioomyelitis	7	6	2	1	4	2	1	2	2	1	3	3
Rabies												
Rocky Mountain spotted fever												
Scarlet fever	606	6	667	3	544	8	411	4	427	5	258	1
Smallpox	41	1	64	4	63	5	24	2	16		23	
Tuberculosis	683	554	563	408	592	558	617	520	624	456	450	410
Typhoid fever	135	25	60	11	68	15	53	9	76	14	81	18

GROUP I. COMMUNICABLE DISEASES.
Number of Cases and Deaths During 1917, by Months—Continued.

	July		August		September		October		November		December		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Diphtheria	97	15	117	9	112	17	301	20	308	18	268	24	2,576	207
Leprosy	2				2		4	1	1			1	21	6
Malaria	75	5	138	8	158	9	141	7	47	4	12	7	759	47
Measles	600	14	540	3	332		310	1	463		855	14	22,021	188
Meningitis (epidemic cerebro)	28	3	11		3		6		15	3	20	6	133	31
Polioomyelitis	4	1	11	1	9	2	9	3	10	2	7	2	69	26
Rabies														
Rocky Mountain spotted fever														
Scarlet fever	200	5	179	2	200		386	7	327	4	309	4	4,514	49
Smallpox	14		11		26		16		16	1	15		329	13
Tuberculosis	440	433	617	396	564	338	663	381	505	396	606	488	6,962	5,457
Typhoid fever	159	22	228	29	175	22	195	23	96	23	107	14	1,429	225

GROUP II. COMMUNICABLE DISEASES.

Number of Cases Reported During 1917, by Months.

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Anthrax.....	1						1	6	2	7	4	2	33
Beri-beri.....		1	1	2									4
Chickenpox.....	598	794	943	721	763	336	137	86	143	285	524	536	5,866
Dengue.....							1						1
Dysentery.....			2	1	5	15	8	8	13	13	7	2	74
Erysipelas.....	59	50	70	54	59	36	32	26	20	29	33	32	509
German measles.....	16	23	54	47	310	168	79	141	74	62	232	322	1,729
Gonococcus infection.....	208	112	119	166	177	151	201	322	317	302	562	339	3,006
Hookworm.....	68	50	28	32	11		1			9	24	21	244
Leprosy.....	2	3	3		3	1	2		2	4	1		21
Mumps.....	649	806	1,028	911	1,235	669	371	340	341	578	291	225	7,535
Pellagra.....			2	1	3	1	4	5	1	2	1	1	21
Pneumonia.....	328	238	182	169	177	107	66	99	185	180	266	405	2,432
Syphilis.....	177	123	113	133	131	79	114	141	143	170	212	261	1,797
Tetanus.....	2	2	2	1	3	2	3	7	4	6	5	1	38
Trachoma.....	15	9	17	24	11	2	1	4	9	14	34	30	170
Whooping cough.....	104	133	168	532	507	206	166	189	138	325	315	224	3,657
Typhus fever.....	1					1			1				3

Typhoid Fever.

Several important outbreaks of typhoid fever occurred during the biennial period covered by this report. The sources of infection were attributed to milk from infected dairies, water from typhoid polluted streams, carriers and oysters.

In May, 1916, an outbreak occurred at Helm, in Fresno County, resulting in 28 cases among persons attending a school picnic, the source of infection being ice cream infected by a typhoid carrier who prepared this food for the picnic.

A widespread epidemic also occurred in Taft, Maricopa and the West Side oil fields of Kern County during May, June and July, 1916. There were 112 cases, some of which were due to the use of milk from a dairy employing a milker who had an ambulatory case, the rest resulting from secondary infections, and from a carrier in an ice cream parlor. In the period from May, 1916, to May, 1917, there was an outbreak in Bakersfield, the source of which was found in a carrier connected with a dairy resulting in 24 cases among persons using this milk.

A water-borne outbreak occurred in San Pablo Canyon in Contra Costa County involving a total of 52 cases reported from a construction camp in this canyon. The water from San Pablo Creek, which supplied this camp, was found to be polluted.

An unusual typhoid outbreak occurred in January, 1917, in San Diego City, resulting in 42 cases. This outbreak was traced to persons consuming raw oysters obtained from beds which were badly polluted by sewage. In the latter part of June, 1917, running through July and August, an outbreak occurred in Modesto resulting in 51 cases. An investigation showed that this epidemic was due to milk from a dairy, which had previously employed a typhoid carrier.

In the fall of 1917 a widespread outbreak occurred in Hollywood, Los Angeles County, resulting in 30 cases, source of infection being

milk-borne. During this same period an outbreak occurred in Blythe, resulting in 14 cases.

While the number of cases of typhoid reported in the past two years shows an increase over the number reported in 1915, yet, the mortality tables show a decrease. This, coupled with the increase in population, furnishes adequate testimony of the great amount of typhoid control work which has been done. It also indicates the counties in which the least control work has been done. This disease is not reported as it should be in several counties. In the detailed tables for the year 1917 it will be noted that Inyo and Tuolumne counties have reported deaths from typhoid fever, but have not reported any cases.

Despite the fact that the greater number of cases are reported from the larger cities of the state, San Francisco, Los Angeles, Oakland, Sacramento and San Diego, yet, the highest rates in proportion to population are from rural communities.

Average Mortality From Typhoid Fever Per 100,000 Population by Counties,
Covering Past Three Years.

County	1915	1916	1917	County	1915	1916	1917
Alameda	9.8	6.6	3.0	Orange	19.0	9.0	6.6
Alpine				Placer	10.2		9.9
Amador	22.0	97.0	11.0	Plumas		17.7	
Butte	36.7	11.5	11.5	Riverside	13.8	15.4	14.9
Calaveras	21.8		11.0	Sacramento	21.5	8.5	13.1
Columbia	75.7		24.9	San Benito		11.2	11.0
Contra Costa	18.0	9.6	4.8	San Bernardino	4.2	16.7	10.3
Del Norte				San Diego	8.9	7.2	12.8
El Dorado		13.3	40.0	San Francisco	9.0	3.4	5.1
Fresno	11.5	11.6	16.4	San Joaquin	18.7	14.0	16.1
Glenn	30.4	11.5		San Luis Obispo	9.6	18.9	
Humboldt	5.3		2.9	San Mateo		5.6	8.1
Imperial	17.2	42.3	4.6	Santa Barbara	15.4	17.9	11.7
Inyo		11.6	22.6	Santa Clara	8.3	6.0	4.0
Kern	25.5	17.5	13.1	Santa Cruz	3.5	3.4	3.4
Kings	36.2	9.8	14.6	Shasta	15.2	25.0	5.0
Lake	20.2	20.0		Sierra			
Lassen				Slaskiyon	15.2		
Los Angeles	5.6	4.4	5.9	Solano	10.2	3.3	3.3
Madera		10.4		Sonoma	7.5	9.0	5.0
Marin	3.3			Stanislaus	29.2	6.5	28.1
Mariposa				Sutter	15.3		30.0
Mendocino		3.8	3.8	Tehama	25.8	26.0	25.9
Merced	5.5		5.1	Trinity			
Modoc				Tulare	6.8	6.4	8.1
Mono				Tuolumne	10.0	20.0	20.0
Monterey	11.3	3.7	3.7	Ventura	2.9	4.7	4.6
Napa				Yolo	7.1	14.1	
Nevada		6.9	6.9	Yuba	18.5	18.3	9.0

Typhoid Fever, 1916—Number of Cases and

County	January		February		March		April		May	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Alameda	3	1	5		9	2	7	4	16	3
Alpine										
Amador						1		1		
Butte	1				1	1	1		2	
Calaveras										
Colusa									1	
Contra Costa					1		2		2	
Del Norte										
El Dorado										
Fresno	3		3			1			2	2
Glenn										1
Humboldt					1					
Imperial			1			1			5	1
Inyo										
Kern					2				3	1
Kings	1								3	
Lake										
Lassen										
Los Angeles	7		4	3	14	1	12	2	17	4
Madera										
Marin										
Mariposa										
Mendocino			3		2					
Merced							1			
Modoc			2							
Mono										
Montrey	2									
Napa										
Nevada	1	1								
Orange		1	2					1	8	1
Placer			1							
Plumas										
Riverside	1		1	2	1		2	1	3	
Sacramento	1	2	1	1	3	1	2		2	
San Benito									1	
San Bernardino			2	1	4	1	4		1	
San Diego	9	1	8	1	9	1	1		3	1
San Francisco	11		15	2	12	2	20	1	14	
San Joaquin					3	3	1	1	3	
San Luis Obispo	1	1			1				3	
San Mateo								1		
Santa Barbara	1			1	2	1			1	
Santa Clara	1						1		2	2
Santa Cruz			1							
Shasta	7									
Sierra										
Siskiyou										
Solano	1			1	2		1			
Sonoma	1	1					1		2	
Stanislaus					1		2	1	1	
Sutter										
Tehama				1			2			
Trinity										
Tulare									1	
Tuolumne	1	2							1	
Ventura	1									
Yolo										
Yuba	1	1						1		
Totals	55	11	49	13	68	16	60	14	121	16

Deaths, Reported by Months, by Counties.

June		July		August		September		October		November		December		Total	
Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
4	2	5	2	17	4	4		7	1	7	1	47	2	131	22
		1		1				1	1	1		3		7	3
		1	2	6		4		7	1	1				21	4
2		2		2		2		2		2	1	1		9	
3		3		9			2	2		2		1		24	4
				1		2	1							3	1
5	4	4	3	8	1	4	1	1		2				56	12
1				1		1								3	1
1		1				1				1				5	
3	2			4	1	3	1	1				2	2	20	8
				2							1			2	1
16	3	25	2	11	1	7	1	1		2		1		97	9
1			1	1		5	1	2						13	2
1								1			1			2	1
22	3	33	6	30	1	15	4	12	2	25	3	7	3	196	32
1		1		1		1			1					1	1
1		1		1		1								4	
		3		1				1	1	1				11	1
						1				1				3	
		1				1								4	
1	1			1		1		1		1		1		8	1
														1	1
2		4		9		4		5	1					34	4
												2		3	
						1	1							1	1
6						3		4	1	1	1	1	2	23	7
6		5		8	1	6	1	1		4	1			39	7
						1			1	1				3	1
3	1		2	2	1	9	1	1	1	2		1		29	8
1	1	2		2		4		2		3	1	6		50	6
14	1	13	1	21		19	5	17	2	18		8	2	189	16
6		9	1	1		5	1	3	1	2	1	3	1	36	9
1		1	1	4	1	3	1			1				15	4
2	1			1			1			1				4	2
3	1			4	1	2		1	1	2	1			16	6
2	1	1		5	2	7		2	1					23	6
				1		1	1			2		1		4	1
1	1	1	1			4	2	2		2	1			19	5
				1		2		2		3				8	
1		2		1						1				9	1
1		1		5	2	5	1	1	1	6		1		24	5
2		2	1	2						1				11	2
1		1						1				1		4	
		6	1	1		2		3	1			1		15	3
		1	1	1			1						1	3	3
														2	2
		3										1		4	1
				1		2	1	3	1	1				7	2
				2										3	2
143	21	123	25	170	16	132	28	85	19	91	13	97	16	1,204	268

Typhoid Fever, 1917—Number of Cases and

County	January		February		March		April		May	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Alameda	19	1	7		2	3			16	2
Alpine										
Amador	1	1								
Butte			2		1	3		1		
Calaveras										
Colusa								1		
Contra Costa	1		1		2			3		
Del Norte										
El Dorado	1	1								
Fresno	1				1	1		1	2	
Glenn										
Humboldt		1								
Imperial	2	2			2	1			7	1
Inyo		1	1							
Kern	4	1			4	1	7		3	2
Kings	1								1	
Lake										
Lassen							1			
Los Angeles	19	5	17	2	10	3	7	1	21	3
Madera										
Marin					1					
Mariposa										
Mendocino										
Merced										
Modoc	1									
Mono										
Monterey									1	
Napa										
Nevada			2		4		1			
Orange					1		4	1	2	
Placer									1	
Plumas										
Riverside	1		2	1	2	1	6			
Sacramento	6	3	2	1	1	1	1		1	
San Benito							1			
San Bernardino					1		1	1		
San Diego	38	1	1	2	2	1			1	2
San Francisco	17	1	20	3	11	1	14	3	9	1
San Joaquin	9	2	2		4		1		3	
San Luis Obispo	1									
San Mateo		1			2		1	1		
Santa Barbara		1			1					
Santa Clara	3	1			5				2	
Santa Cruz			1	1						
Shasta	2		1		2					
Sierra										
Siskiyou			1		2					
Solano		1			1					
Sonoma	6		1				2	1		
Stanislaus	2	1			2	1	1			
Sutter										
Tehama							1	1	1	
Trinity										
Tulare										1
Tuolumne										
Ventura							1			
Yolo									1	
Yuba										
Totals	135	25	60	11	63	15	53	9	76	14

Deaths, Reported by Months, by Counties.

June		July		August		September		October		November		December		Total	
Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
10	1	8		24	1	14	2	7		6		9	1	122	11
														1	1
		1		1	1	1		7	2	1				17	4
						3		2		1				5	1
		2	1	3	1									6	2
3	1	6		2	1			1		1		1		21	2
		2				4	1	1	1	1				9	3
3		5	2	9	2	13	4	9	2	17	2	6	2	65	17
						2								2	
				1		3								4	1
9	2	12	1	1		1		10		1	1	2		47	8
															2
4		1		5			1	1	1	2	1	3		34	7
			3	4		1		2		1				10	5
1				2		4								8	
9	2	27	4	53	6	50	5	56	6	11	4	29	3	300	44
				2		2				1				5	
														1	
				1			1	3	1	1		1		9	1
	1											1		1	1
				1										2	
3										1	1	2		7	1
		1						2						3	
		4				2		1					1	14	1
1				3	2	1		5		1				22	3
1	1	1				1	1					4		5	2
												1		1	
1	2	4	1	11	1	12	1	4				9		52	7
6		9		12		7	1	10	2	4		2	3	61	11
	1			1										2	1
	1	5	2	5	1	5	2	5			1	1		23	8
1				5		1	1	6	2	4	2	2		64	11
12	2	19	3	21	2	20		17	2	15	4	18	2	193	24
5		1	1	8	3	1		21	1	10	2	3	1	68	10
1				2		1				2				7	
		1		1		1						1		7	2
1		1		1	1			1	2	1				6	4
1		8		3	1	4		6	1	1		1	1	34	4
				1				2						4	1
				3		1	1			1				10	1
				6				5						16	
1		5		4		1				1				13	1
5	2	7		2				2		5				30	3
2		23	2	22	5	4		1		1		2		60	9
				2		9	1	3		1	1	3		18	2
		1	1	1		1	1	1				1		7	3
	1	2		1		2		2		2	2			9	4
			1								1				2
	1			2				1						4	1
		1						1		2				5	
		1		2	1							1		4	1
81	18	169	22	228	29	176	22	195	23	95	23	107	14	1,428	225

Smallpox.

There has been a marked increase in the number of cases of smallpox reported during the year 1917 over 1916. This may be partly attributed to improved reporting on the part of physicians and health officers. However, the majority of these smallpox cases may be traced to minor outbreaks. In the year 1918 figures for which are not included in this biennial report, there has been a decided increase over the number of cases reported during 1917. Minor outbreaks, particularly in smaller communities, where the first eruptions broke out in mild form and were diagnosed as "chickenpox" have been responsible for this increase. This was true in the year 1918 in Imperial County. The Children's Year Program was instrumental in revealing the smallpox outbreak in Santa Clara County.

In July, 1916, a smallpox outbreak occurred in Perris, Riverside County, 12 cases having been reported by the local health officer. All of these cases were in Mexicans who had recently come to Perris from Laredo, Texas, where there was an outbreak of smallpox among Mexican refugees. During the year 1916, Imperial, Los Angeles and Riverside counties led in the number of cases reported. In the year 1917 San Francisco heads the list with a total of 102 cases.

Owing to the demand for manual laborers, due to war conditions, a great number of Mexican laborers have entered California. We believe that the large number of cases of smallpox in southern California may be traced to this source. Several cases of smallpox have been discovered in this state where the patient contracted the infection outside of the State, as in the Perris outbreak.

Nearly all persons who have had smallpox in California give histories of never having been successfully vaccinated. The proportion of those who were last vaccinated more than seven years preceding the attack is exceedingly small, and a very few of those having had smallpox were vaccinated within seven years preceding the attack. Unfortunately, with the drop in the number of cases of smallpox, the number of vaccinations has also dropped, for there is no law making vaccination compulsory in California. It holds true that when smallpox is most prevalent, vaccination is relatively in demand. During the years just preceding 1917, the number of cases of smallpox had been considerably less, and this factor accounts for the drop in the number of vaccinations, and consequent increase in the number of cases of smallpox. It is not actually known how long a successful "take" in vaccination will hold good; oftentimes during a whole lifetime, but unless control methods are adopted, the State will again see a decided recurrence, with resultant great expense and suffering.

Smallpox—Vaccination Histories of Cases Reported During 1916.

	Number new cases reported during month	Deaths	Number vaccinated within seven years preceding attack	Number last vaccinated more than seven years preceding attack	Number never success- fully vaccinated	Vaccina- tion not obtained or uncertain
January	22	1	1	9	9	3
February	63		5	10	43	5
March	34		2	8	18	6
April	20	3		4	12	4
May	18		2	11	4	1
June	5			2	2	1
July	17	1	1		15	1
August	12	1			9	3
September	13	2	3	1	5	4
October	6	1			5	1
November	22	2		1	16	5
December	10	1	1	2	7	
Totals	242	12	15	48	145	34

Smallpox—Vaccination Histories of Cases Reported During 1917.

	Number new cases reported during month	Deaths	Number vaccinated within seven years preceding attack	Number last vaccinated more than seven years preceding attack	Number never success- fully vaccinated	Vaccina- tion history not obtained or uncertain
January	41	1		5	28	8
February	64	4	4	10	50	
March	63	5	1	10	50	2
April	24	2		2	20	2
May	16				14	2
June	23				19	4
July	14				11	3
August	11			1	10	
September	26				22	4
October	16				13	3
November	16	1		2	12	2
December	15				13	2
Totals	329	13	5	30	262	32

Smallpox, 1916—Number of Cases and

County	January		February		March		April		May	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Alameda					3		1		1	
Alpine										
Amador			10		4				1	
Butte					2					
Calaveras										
Colusa	5		3							
Contra Costa										
Del Norte										
El Dorado			1		2		3		3	
Fresno					1					
Glenn			2							
Humboldt										
Imperial	1		14						1	
Inyo										
Kern									1	
Kings										
Lake										
Lassen										
Los Angeles	7	1	27		15		12	2	10	
Madera										
Marin										
Mariposa										
Mendocino										
Merced	2									
Modoc										
Mono										
Monterey										
Napa										
Nevada										
Orange										
Placer										
Plumas										
Riverside	1									
Sacramento			1							
San Benito										
San Bernardino			1		5			1	1	
San Diego	1						3			
San Francisco	3				1					
San Joaquin	1		2		1		1			
San Luis Obispo										
San Mateo										
Santa Barbara										
Santa Clara	1									
Santa Cruz										
Shasta										
Sierra										
Siskiyou			1							
Solano										
Sonoma										
Stanislaus										
Sutter										
Tehama										
Trinity										
Tulare			1							
Tuolumne										
Ventura										
Yolo										
Yuba										
Totals	22	1	63		34		20	3	18	

Deaths Reported by Months, by Counties.

June		July		August		September		October		November		December		Total	
Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1						1		4	1	3		2		16	1
														15	
														2	
														8	
										1	1	6	1	7	2
														9	
		1		3	1									5	1
														2	
								1						1	
2										2				20	
				1		1				2	1			5	1
		1		3		1								76	3
														2	
										5				5	
		12				7	2	1		6				27	2
														1	
2		2												11	1
				1						1		1		4	
														7	
														5	
										1				1	
														1	
														1	
				4		3								8	
		1	1											1	1
										1		1		2	
5		17	1	12	1	13	2	6	1	22	2	10	1	218	12

Smallpox, 1917—Number of Cases and

County	January		February		March		April		May	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Alameda	6		12	2	1		5		2	
Alpine										
Amador					1					
Butte	1									
Calaveras										
Colusa										
Contra Costa										
Del Norte										
El Dorado										
Fresno	2				1					
Glenn										
Humboldt										
Imperial	1								4	
Inyo										
Kern										
Kings										
Lake										
Lassen										
Los Angeles	2		2		9		8		4	
Madera										
Marin	1								1	
Mariposa										
Mendocino										
Merced										
Modoc										
Mono										
Monterey										
Napa										
Nevada										
Orange	1									
Placer	8		1							
Plumas										
Riverside										
Sacramento										
San Benito										
San Bernardino					15		1		2	
San Diego	2		2		1					
San Francisco	14	1	38	2	31	8	12			
San Joaquin					2		2			
San Luis Obispo										
San Mateo			1							
Santa Barbara										
Santa Clara			1		2	2		2	1	
Santa Cruz										
Shasta									1	
Sierra										
Siskiyou										
Solano	8		7				1		1	
Sonoma										
Stanislaus										
Sutter										
Tehama										
Trinity										
Tulare										
Tuolumne										
Ventura										
Yolo										
Yuba										
Totals	41	1	64	4	63	5	24	2	16	

Deaths Reported by Months, by Counties.

June		July		August		September		October		November		December		Total	
Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
3				1		1						2		33	2
		1												1	
														2	
8		9		9		1		2						32	
														5	
								11	1		2			14	
4						2			2		4			32	
3														5	
						19		3	2		2			26	
														1	
														4	
		1										1		1	
														1	
5		1									1			25	
				1		3			1	1	2			6	
														102	7
														4	
		1												2	
														4	4
														1	
									1		1			19	
										8					8
		1												1	
23		14		11		26		16		16	1	15		329	13

REPORT OF THE STATE BOARD OF HEALTH.

**Poliomyelitis (Infantile Paralysis)—Number of Cases and Deaths in California,
January 1, 1915, to December 31, 1917.**

	1915		1916		1917		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
January	6		4	2	7	6	17	8
February	2	1	6	2	2	1	10	4
March	2	3	1		4	2	7	5
April	2	3	3		1	2	6	5
May	3	1	2	1	2	1	7	3
June	6	2	4	1	3	3	13	6
July	1	1	12	1	4	1	17	3
August	2		19	3	11	1	32	4
September	12	2	19	4	9	2	40	8
October	4	3	26	3	9	3	39	9
November	12	1	28	4	10	2	50	7
December	13	2	21	3	7	2	32	7
Totals	62	19	145	24	69	25	276	63

Poliomyelitis, 1916—Number of Cases Reported by Months, by Counties.

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Alameda County			1				1	3		3		1	8
Amador County										1		1	2
Butte County								1	2	1			4
Calaveras County											1		1
Colusa County											1		1
Contra Costa County											1		1
Fresno County										1			1
Humboldt County											1		1
Imperial County							1	1					2
Kern County		1											1
Kings County									2		1		3
Los Angeles County	4	4		1	2	1	4	5	3	5	3	4	36
Marin County											2	1	3
Mendocino County									2				2
Nevada County											1		1
Riverside County								3		1	3		7
Sacramento County				2							1		3
San Bernardino County											1	1	2
San Francisco County						2	5	3	6	6	6	7	35
San Joaquin County					1			1	2				4
San Luis Obispo County										1	1	1	3
Santa Barbara County										4	1		5
Santa Clara County									1	1	1	1	4
Solano County						1							1
Sonoma County		1						1		1	1		4
Stanislaus County									1				1
Tehama County								1		2	1	1	5
Tulare County											1		1
Ventura County												1	1
Yuba County												2	2
Totals	4	6	1	3	2	4	12	19	19	26	28	21	145

Polio-myelitis, 1917—Number of Cases Reported by Months, by Counties.

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Alameda County						1	1	1	2	2			7
Butte County										1	1		2
Contra Costa County										1			1
Fresno County			1										1
Glenn County			1					2					3
Los Angeles	1			1		3		1	2	6	2	2	18
Marin County							1	1					2
Mendocino County								1	1				1
Merced County		1											1
Nevada County										2			2
Orange County	1					1							2
Placer County									1				1
Riverside County										1			1
San Diego County	1								2				3
San Francisco County	2							3				1	6
San Joaquin County												2	2
San Mateo County								1	1		1		3
Santa Barbara County		1											1
Santa Clara County			1			1							2
Santa Cruz County				1									1
Shasta County	1												1
Sonoma County	1							1	1				3
Sutter County												1	1
Tehama County			1										1
Tulare County					1								1
Yuba County								1		1			2
Totals	7	2	4	1	2	3	4	11	9	9	10	7	60

Cerebrospinal Meningitis, 1916—Number of Cases, Reported by Months, by Counties.

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Contra Costa County								1					1
Imperial County					1		1						2
Inyo County					2								2
Kern County		1											1
Los Angeles County	2	2	1		4		2	2	1		2	4	20
Marin County		1											1
Mendocino County		1	1										2
Orange County	1		1					1		1			4
Riverside County	1												1
Sacramento County	1				1								2
San Bernardino County	1		1							1			3
San Diego County			1	1									2
San Francisco County	3								1			2	6
San Joaquin County					1		3	4				1	9
San Mateo County						1							1
Santa Barbara County							1		1				2
Siskiyou County						1							1
Solano County				1									1
Sonoma County	1												1
Stanislaus County											1		1
Tehama County							1						1
Totals	10	4	6	2	9	2	7	9	2	3	3	7	61

Cerebrospinal Meningitis, 1917—Number of Cases Reported by Months, by Counties.

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Alameda County		1			1	1	2	3		1	1		10
Butte County	1			1									2
Contra Costa County				1	1			1					3
Fresno County		1		1								1	3
Kern County	1	1		1									3
Los Angeles County	2		5		1	4	1				1	8	23
Merced County				1									1
Orange County												1	1
Placer County							1						1
Sacramento County			1										1
San Bernardino County				1									1
San Diego County						2	18	4	1	3	13	6	47
San Francisco County	2			4	3	3	5	2	1	1		2	25
San Joaquin County				1		1		1					3
San Mateo County									1				1
Santa Clara County	2												2
Solano County		1								1		1	3
Sonoma County												1	1
Ventura County	1					3	1						5
Totals	9	4	6	11	6	14	28	11	3	6	15	20	133

REPORT OF THE BUREAU OF COMMUNICABLE DISEASES.

FRANK L. KELLY, M.D., Gr.P.H., Director.

DIVISION OF THE HYGIENIC LABORATORY.

Karl F. Meyer, D.V.M.	Consulting Bacteriologist
Ida M. Stevens, M.A. (P.H.)	Bacteriologist
Grace A. Macmillan	Bacteriologist
Eschscholtzia Lichthardt, B.A.	Bacteriologist
Violet M. Bathgate, M.S., Southern Branch, Los Angeles	Bacteriologist
Mrs. L. Ramsay, Northern Branch, Sacramento	Bacteriologist
A. R. Wickham	Technician
Lucy Powers, Southern Branch, Los Angeles	Technician
Florence B. Shackelford	Stenographer
Mary G. Beck	Stenographer
Lucile Bofinger	Stenographer
Grace B. Naquin, Southern Branch, Los Angeles	Stenographer

DIVISION OF EPIDEMIOLOGY.

Frank L. Kelly, M.D., Gr.P.H.	Epidemiologist
John N. Force, M.D., Gr.P.H.*	Consulting Epidemiologist

DIVISION OF PARASITOLOGY.

C. A. Kofold, Ph.D.*	Consulting Parasitologist
Wm. W. Cort, Ph.D.	Consulting Helminthologist

DIVISION OF ENTOMOLOGY.

Wm. B. Herms, M.S.*	Consulting Entomologist
Stanley B. Freeborn, M.S.	Acting Consulting Entomologist
Rodney F. Atsatt	Inspector

During the past two years several changes have been made in the organization of the Bureau of Communicable Diseases. The most important change was the establishment in August, 1917, of the Southern Branch at Los Angeles, with a full-time bacteriologist in charge. Heretofore the work of the Southern Branch had been done by private laboratories on a part-time basis. Besides this change, the divisions of the bureau were rearranged so that there are now four divisions—the Division of the Hygienic Laboratory, the Division of Epidemiology, the Division of Parasitology and the Division of Entomology.

DIVISION OF THE HYGIENIC LABORATORY.

The work of this division may be grouped under two headings: I. Biological Examinations. II. Preventive Therapeutics.

I.

Biological Examinations.

The work of the diagnostic laboratory has increased greatly during this period, as will be seen from Table II. There has been a 60 per cent increase in the diagnostic work over the previous biennial period. This does not include the examinations made by the Division of Parasitology

*On Federal service.

for hookworm, which were formerly made by the diagnostic laboratory. Even with this increase the laboratory is serving only a small part of the physicians in the state and it is hoped that with the aid of the state district health officers we will now be able to reach a great many more. An important branch of the work is the examination of the excreta of convalescent typhoid patients and an effort will be made to have physicians make it a routine practice to send specimens to the laboratory from all such cases. Diagnostic examinations are made for the following diseases:

- Anthrax, blood and tissue.
- Botulism, suspected food.
- Diphtheria, swabs from nose and throat.
- Dysentery, blood (agglutination); feces.
- Gonococcus Infection, smears.
- Hookworm and Intestinal Worms, feces.
- Intestinal Protozoa, feces.
- Leprosy, smears and tissue.
- Malaria, blood.
- Meningitis (epidemic), spinal fluid.
- Pneumonia, sputum.
- Rabies, brain tissue.
- Rocky Mountain Spotted Fever, blood (animal inoculation).
- Syphilis, blood and spinal fluid (Wassermann).
- Tuberculosis, sputum.
- Typhoid, blood (agglutination); feces; urine.
- Typhus, blood (animal inoculation).

The technique used in the different examinations will be found at the end of the bureau report.

Containers for sending specimens to the laboratory are furnished free by the bureau. These containers comply with the postal regulations and persons are warned against sending in specimens in any other way. Containers will be sent direct from the laboratory to physicians on request or can be obtained from any of the authorized depositories, a list of which is appended at the end of this report.

II.

Preventive Therapeutics.

At present the bureau prepares two biologic products, antirabic virus and typhoid and typhoid-paratyphoid vaccine. The antirabic virus is prepared according to the method used by the Hygienic Laboratory of the United States Public Health Service. It is administered free at the main laboratory at Berkeley and its branches, and at certain cities by authorized health departments and hospitals in the state. From July, 1916, to June, 1918, inclusive, thirty-nine antirabic treatments were either distributed or administered at the main laboratory. The typhoid and typhoid-paratyphoid vaccines are prepared according to the methods used by the Hygienic Laboratory of the United States Public Health Service. This is known as the "Army" vaccine. Heretofore, the bureau prepared and distributed a sensitized, sedimented vaccine prepared according to the method of Gay and Claypole. It

was deemed advisable to change to the Army type of vaccine, as this is the vaccine recommended by the United States Public Health Service. The vaccines are distributed free to physicians and institutions throughout the state. During this biennial period five thousand twelve complete treatments were distributed. Besides these biologics the bureau distributes free to physicians, midwives and institutions ampules of 1 per cent silver nitrate solution for the prevention of ophthalmia neonatorum. Ten thousand eight hundred six of these outfits were sent out during the past biennial period.

DIVISION OF EPIDEMIOLOGY.

Since April, 1917, the bureau has made every possible endeavor to assist the federal government in the control of communicable diseases in and about army and navy camps and reservations. That such aid has been recognized and appreciated is shown by the fact that when epidemic meningitis appeared among the student aviators at Berkeley. Dr. Sandow, the medical officer in charge, was told by the department at Washington to take up the matter with the State Hygienic Laboratory. We were able to give assistance in culturing the exposed men and in recommending measures to prevent the spread of the disease.

Probably two of the most important field problems with which this bureau has to deal are those of typhoid fever and dysentery. During the past two years, over twenty outbreaks of typhoid fever have been investigated. In some instances, we were not informed of the outbreak until too late to be of any assistance, but in the majority of the epidemics the source of the infection was located, the epidemic stopped and measures taken to prevent further trouble. About ten outbreaks of bacillary dysentery have come to the attention of the bureau. While most of these have been confined to a few cases, the work of the laboratory has been of great value in establishing the proper diagnosis and recommending measures to prevent the spread of the disease.

During the widespread epidemic of poliomyelitis in the United States in 1916, the bureau made over twenty investigations in the state in order to assist in diagnosing the disease and to prevent its spread. Whether or not this work was of any great value in preventing an epidemic in California can not be definitely stated. However, the fact remains that the epidemic predicted for California for 1917 did not materialize.

When typhus fever was introduced into southern California in 1916 and reached the proportions of an epidemic which threatened to become serious, the prompt work of the bureau in establishing and enforcing control measures not only prevented the spread of the disease but entirely stamped it out.

In the summer of 1917, when an epidemic of cerebro-spinal meningitis threatened the Naval Training Station at San Diego, the bureau co-operated with the Navy and the United States Public Health Service in culturing the men. This work was put on a proper scientific basis through the efforts of Dr. K. F. Meyer, consulting bacteriologist of the bureau. The bureau assisted in culturing the men at the Naval Training Camp at San Pedro and also at Fort McArthur.

During the past biennial period there were one hundred and six epidemiological investigations made, thirty-three more than during the

period from July, 1914, to July, 1916. Following is a list of the epidemiological investigations for this period:

Epidemiological Investigations.

July, 1916—

1. Acute anterior poliomyelitis, Vallejo.
2. Acute anterior poliomyelitis, Oakland.
3. Acute anterior poliomyelitis, Santa Rosa.
4. Acute anterior poliomyelitis, Oakland.
5. Continuation, hookworm in gold mines of California.
6. Acute anterior poliomyelitis, Richmond.
7. Acute anterior poliomyelitis, Antioch.
8. Typhoid fever, Maricopa and Taft.

August—

- 8a. Continuation, typhoid fever, Maricopa and Taft.

September—

9. Bacillary dysentery, Pinole.
10. Diphtheria, San Jose.
11. Smallpox, Banning.
12. Typhoid fever, San Jose.
13. Typhoid fever, Steamship Matsonia.
14. Typhus fever, southern California.

October—

15. Typhus fever, southern California.
16. Hookworm, Grass Valley.
17. Diphtheria, Collinsville.
18. Acute anterior poliomyelitis, Ione.
19. Acute anterior poliomyelitis, San Mateo.
20. Acute anterior poliomyelitis, Gustine.
21. Smallpox, Alameda County Infirmary.
22. Typhus fever, southern California.
23. Hookworm, Grass Valley.

November—

- 23a. Continuation, hookworm, Grass Valley.
- 22a. Continuation, typhus fever, southern California.
24. Tetanus, San Francisco.
25. Bacillary dysentery, Napa.
26. Typhoid fever, Sonoma State Home, Eldridge.
27. Broncho-pneumonia, Sonoma State Home, Eldridge.
28. Typhoid fever, Rodeo.

December—

29. Acute anterior poliomyelitis, Oakland.
30. Acute anterior poliomyelitis, Marysville.
31. Acute anterior poliomyelitis, Avila.
32. Chickenpox, Oakland.
- 22b. Continuation, typhus fever, California.
33. Acute anterior poliomyelitis, Mill Valley.
34. Acute anterior poliomyelitis, Oakland.
35. Acute anterior poliomyelitis, Lagunitas.
36. Acute anterior poliomyelitis, San Luis Obispo.
- 23b. Continuation, hookworm, Grass Valley.
37. Botulism, Corning.
38. Typhoid fever, San Pablo Dam Construction Camp, Contra Costa Co.

January, 1917—

- 39. Diphtheria, Monterey.
- 40. Typhus fever, Clovis.
- 41. Acute anterior poliomyelitis, Kennett.
- 42. Post-vaccination tetanus, San Francisco.
- 43. Acute anterior poliomyelitis, Mill Valley.
- 44. Anthrax, Alameda County Hospital.
- 45. Scarlet fever, Alameda.
- 46. Typhoid fever, Alameda.
- 23c. Continuation, hookworm, California.
- 38a. Continuation, typhoid fever, San Pablo Dam Construction Camp, Contra Costa County.

February—

- 47. Acute anterior poliomyelitis, Redding.
- 48. Acute anterior poliomyelitis, Modesto.
- 49. Scarlet fever, San Leandro.
- 23d. Continuation, hookworm, California.
- 22b. Continuation, typhus fever, California.
- 50. Typhoid fever, Bakersfield.

March—

- 51. Trichinosis, San Rafael.
- 52. Diphtheria, Crockett.
- 53. Typhoid fever, Bakersfield.
- 54. Scarlet fever, San Leandro.
- 55. Malaria, Los Molinos and Vina.
- 56. Anthrax, Napa.
- 57. Typhoid fever, Floriston.
- 23c. Continuation, hookworm, California.

April—

- 58. Typhoid fever, Bakersfield.
- 59. Scarlet fever, Bakersfield.
- 60. Smallpox, Oakland.
- 61. Amoebic dysentery, Camp Seco.
- 62. Smallpox, Oakland.
- 23f. Continuation, hookworm, California.

May, 1917—

- 63. Malaria, Los Molinos.
- 64. Typhoid fever, Corning.
- 65. Rocky Mountain spotted fever, Palo Alto.
- 66. Scarlet fever, Taft.
- 67. Leprosy, Oakland.
- 68. Leprosy, Richmond.
- 23g. Continuation, hookworm, California.

June—

- 69. Typhus fever, Los Banos.
- 70. Plague, Oakland.
- 71. Plague, Oakland.

July—

72. Typhoid fever, Modesto.
73. Diphtheria, Crockett.
74. Enteritis, Sausalito.
75. Epidemic meningitis, United States Naval Training Station, San Diego.
76. Bacillary dysentery, Napa.
77. Smallpox, Oakland.
78. Typhus fever, Riverside County.

August—

- 75a. Continuation, epidemic meningitis, United States Naval Training Station, San Diego.
- 72a. Continuation, typhoid fever, Modesto.

September—

79. Typhoid fever, Mokelumne Hill.

October—

80. Anthrax, Suisun.
81. Diphtheria, Calabasas.

November—

82. Typhoid fever, Stockton.
83. Acute anterior poliomyelitis, Bay Point.
84. Bacillary dysentery, near Winters.
85. Typhoid fever, Mendocino County.

December—

86. Typhoid fever, Hornitos.
87. Yaws, Corning.
88. Typhoid fever, Live Oak.

January, 1918—

89. Trichinosis, Livermore.
90. Leprosy, San Luis Obispo.
91. Leprosy, Pittsburg.
92. Typhoid fever, Blythe.

February—

93. Typhoid fever, San Jose.

March—

94. Typhoid fever, San Dimas.
95. Smallpox, Oakland.

April—

96. Epidemic meningitis, S. S. Anyo Maru.
97. Trichinosis, Suisun.

May—

98. Rocky Mountain spotted fever, Portola.
99. Typhoid fever, Merced Falls.
100. Bacillary dysentery, Oakland.
101. Bacillary dysentery, Colton.
102. Bacillary dysentery, Santa Ana.
103. Typhoid fever, National City.
104. Smallpox, Colton.

June—

105. Smallpox, Oakland.
106. Leprosy, Fresno.

TABLE I.—Number of Examinations and Results, July 1, 1916, to June 30, 1918.

Years	Anthrax		Diphtheria		Dysentery (bacillary)		Gonococcus infection		Hookworm	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1916.....	8	42	865	3,442	0	0	52	173	64	1,722
January to June, 1917.....	5	25	579	3,054	0	0	98	254	157	2,000
July to December, 1917.....	70	206	748	3,709	0	4	88	332	1	3
January to June, 1918.....	5	24	868	4,150	10	37	195	510	0	0
Totals.....	88	297	3,000	14,445	10	41	433	1,269	222	3,725

Years	Leprosy		Malaria		Meningitis (epidemic)		Para-typhoid		Plague	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1916.....	0	0	21	98	0	0	0	0	0	0
January to June, 1917.....	0	0	11	78	0	0	0	0	0	0
July to December, 1917.....	0	15	11	100	0	0	0	10	0	0
January to June, 1918.....	1	1	10	96	7	83	0	16	0	0
Totals.....	1	16	53	367	7	83	0	26	0	0

Years	Pneumonia		Rabies		Syphilis		Trichinosis		Tuberculosis	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1916.....	0	0	23	91	109	1,113	0	0	139	445
January to June, 1917.....	0	0	30	79	95	1,197	0	0	125	506
July to December, 1917.....	0	0	14	40	169	1,273	1	2	139	530
January to June, 1918.....	3	3	21	53	401	5,505	2	2	173	679
Totals.....	3	3	88	263	774	9,088	3	4	576	2,150

Years	Typhoid (blood)		Typhoid (excreta)		Miscellaneous
	Positive	Total	Positive	Total	
July to December, 1916.....	129	655	3	68	27
January to June, 1917.....	47	384	9	122	35
July to December, 1917.....	181	721	0	92	67
January to June, 1918.....	100	480	6	42	72
Totals.....	457	2,240	18	324	201

¹Hookworm examinations made by Division of Parasitology since September, 1917.

TABLE II.—Increase in Number of Examinations, July 1, 1906, to June 30, 1918.

Years	Anthrax	Diphtheria	Dysentery ¹ (bacillary)	Gonorrhea infection	Hookworm ²	Leprosy ³	Malaria	Measles (epidemic)	Typhoid ³
July, 1906, to July, 1906.....	0	330	0	0	0	0	0	0	0
July, 1906, to July, 1908.....	0	1,231	0	0	0	0	0	0	0
July, 1908, to July, 1910.....	0	2,798	0	0	0	0	58	0	0
July, 1910, to July, 1912.....	27	2,267	0	46	9	0	88	0	0
July, 1912, to July, 1914.....	86	3,337	0	353	15	0	194	0	0
July, 1914, to July, 1916.....	144	10,834	0	747	1,256	0	276	0	0
July, 1916, to July, 1918.....	297	14,445	41	1,299	3,725	16	367	83	26
Totals.....	553	35,237	41	2,415	5,006	16	963	83	26

Years	Plague	Pneumonia ¹	Rabies	Syphilis	Typhoid ³	Tuberculosis	Typhoid (blood)	Typhoid (feces)	Miscellaneous
July, 1906, to July, 1906.....	1	0	0	0	0	54	32	0	96
July, 1906, to July, 1908.....	13	0	0	0	0	255	186	0	504
July, 1908, to July, 1910.....	0	0	37	0	0	497	330	0	145
July, 1910, to July, 1912.....	5	0	243	0	0	716	667	0	69
July, 1912, to July, 1914.....	7	0	770	142	0	908	1,242	0	150
July, 1914, to July, 1916.....	4	0	608	2,456	0	1,506	1,927	0	148
July, 1916, to July, 1918.....	0	3	263	9,068	4	2,150	2,240	324	301
Totals.....	30	3	1,916	11,686	4	6,066	6,623	324	1,313

¹These examinations either listed under "Miscellaneous" or not made previous to this biennial period.

²Hookworm examinations made by the Division of Parasitology since September, 1917.

³Blood and excreta examinations listed together before this biennial period.

Depositories for the Mailing Outfits of the Bureau of Communicable Diseases.

County	Town	Drug store
Alameda	Alameda	Flatow's Drug Store
	Centerville	Greenwood's Pharmacy
	Hayward	Rogers' Pharmacy
	Livermore	McKown & Mess
	Niles	Snedden's Pharmacy
	Oakland	Phillip & Phillip
Amador	Pleasanton	Peter Rock
	San Leandro	A. H. Morris
	Yone	Model Drug Store
	Sutter Creek	Morris & Siebe
Butte	Chico	Ben Hastings Pharmacy
	Gridley	Gridley Pharmacy
	Arbuckle	Chas. G. Stinson
Colusa	Colusa	Oscar Robinson
	Maxwell	Fouch's Drug Store
	Williams	J. F. Fouch
	Antioch	Palace Drug Company
Contra Costa	Concord	C. W. Klein
	Crockett	Crockett Drug Company
	Pinole	Pinole Drug Company
	Pittsburg	Regal Pharmacy
	Richmond	Ferguson's Drug Store
	Richmond	La Moine's Drug Store
	Richmond	Richmond Pharmacy
	Walnut Creek	Wigets Pharmacy
Fresno	Clovis	Clovis Drug Store
	Coalinga	Flintz Drug Store
	Fresno	San Joaquin Drug Company
	Kingsburg	Reliable Pharmacy
	Reedley	Reedley Drug Company
	Sanger	O. A. Brehler
	Selma	Dusey & Sawrie

**Depositories for the Mailing Outfits of the Bureau of Communicable Diseases—
Continued.**

County	Town	Drug store
Glenn	Orland	Birch & Co.
Humboldt	Arcata	Skinner Duprey Drug Company
	Eureka	Keller-Bohmansson Drug Co.
	Fortuna	Bowman's Drug Store
	Scotia	Scotia Hospital
Imperial	Brawley	Fulton's Pharmacy
	El Centro	McColloch Drug Co.
	Holtville	Holtville Pharmacy
	Imperial	Imperial Pharmacy
Kern	Bakersfield	Baer Brothers
	Delano	Ramsay's Pharmacy
	East Bakersfield	Kern Drug Co.
	Taft	Taft Pharmacy
	Tehachapi	Yerian Brothers
Kings	Corcoran	Corcoran Drug Store
	Hanford	M. M. Bartholomew Drug Store
Lake	Kelseyville	Pond Drug Store
	Lakeport	Meddaugh's Drug Store
	Lower Lake	Dr. H. P. Welper
	Middletown	Middletown Drug Store
Lassen	Susanville	J. B. Spalding
Los Angeles	Alhambra	Central Drug Co.
	Artesia	Artesia Pharmacy
	Azusa	Dolley Drug Co.
	Bellflower	Chas. F. Story's Pharmacy
	Belvedere	The Logan Drug Co.
	Burbank	Burbank Pharmacy
	Claremont	College Drug Store
	Compton	W. E. Dean's Pharmacy
	Covina	W. W. Nash
	Downey	O. W. Heying
	Eagle Rock	Eagle Rock Drug Co.
	El Monte	El Monte Drug Store
	Florence	Florence Pharmacy
	Gardena	Gardena Pharmacy
	Glendale	Glendale Pharmacy
	Hawthorne	Rankin's Drug Store
	Huntington Park	Batcheller's Pharmacy
	Inglewood	Fred J. Fehrensén & Son
	Lordsburg	Kenyon's Pharmacy
	Los Angeles	Cralego's Pharmacy
	Los Angeles	The Logan Drug Co.
	Monrovia	Thos. Neville
	Norwalk	Norwalk Pharmacy
	Ocean Park	Moody's Drug Store
	Palmdale	Palmdale Pharmacy
	Pasadena	The Modern Pharmacy
	Pomona	Campbell & Pierce
	San Dimas	San Dimas Drug Store
	San Fernando	San Fernando Drug Co.
	Sherman	McGoodwin's Drug Store
	Venice	Lutz Pharmacy
	Whittier	Whittier Pharmacy
Marin	Belvedere	Belvedere Pharmacy
	Mill Valley	Lockwood Pharmacy
	San Anselmo	Poppy Pharmacy
	San Rafael	Day's Pharmacy
	Sausalito	Sausalito Drug Co.
Mendocino	Fort Bragg	Pacific Drug Store
	Mendocino	C. O. Packard Drug Store
	Mendocino	Pioneer Drug Co.
	Ukiah	Morris & LeRoy
	Willits	Rex Drug Co.
Merced	Dos Palos	Dos Palos Drug Store
	Los Banos	Thiercof Drug Store
	Merced	Merced Drug Co.
Modoc	Alturas	Gibson Drug Co.
	Cedarville	Cedarville Drug Co.
Monterey	Monterey	Palace Drug Co.
	Salinas	Krough's Drug Store
Napa	Napa	Arighi & Ballerini
	St. Helena	Smith's Pharmacy
Nevada	Nevada City	Dickerman Pharmacy
Orange	Anaheim	Mullinix Drug Store
	Fullerton	Finch's Drug Store
	Orange	K. E. Watson Co.
	Santa Ana	Rowley Drug Store

**Depositories for the Mailing Outfits of the Bureau of Communicable Diseases—
Continued.**

County	Town	Drug store
Placer	Auburn	J. G. McLaughlin
	Colfax	J. L. Butler & Son
	Dutch Flat	Dr. J. H. Johnston
	Lincoln	Ingram's Drug Store
	Loomis	Loomis Pharmacy
Plumas	Quincy	Quincy Drug Store
Riverside	Banning	Banning Drug Store
	Beaumont	Robert Fulton
	Corona	R. F. Billings Estate
	Hemet	Wedemeyer's Pharmacy
	Perris	Perris Pharmacy
Sacramento	Riverside	F. A. Gardner & Co.
	Elk Grove	"Ye Medicine Shop"
San Bernardino	Folsom	S. H. & F. P. Burnham
	Chino	Reher's Pharmacy
	Colton	Colton Pharmacy
	Needles	Needles Drug and Jewelry Co.
	Redlands	Mont P. Chubb Drug Co.
San Diego	San Bernardino	Owl Drug Store
	Victorville	Victor Valley Drug Store
	Chula Vista	Wigginton's Pharmacy
	Coronado	Central Drug Store
	East San Diego	Parkin Drug Co.
	Escondido	Rolfes Drug Co.
	La Mesa	La Mesa Drug Store
	National City	Keller's Drug Store
	Oceanside	Exton & Nichols
	Ramona	Thos. Jerman
San Joaquin	San Diego	Ferris & Ferris
	Stockton	Eagle Drug Store
San Luis Obispo	Arroyo Grande	W. A. Conrad, Jr.
	Cambria	People's Drug Store
	Paso Robles	W. C. Bennett
San Mateo	San Luis Obispo	People's Pharmacy
	South San Francisco	Peninsula Drug Co.
Santa Barbara	Santa Barbara	Sterling Drug Co.
Santa Clara	Campbell	Orchard City Drug Co.
	Los Gatos	Geo. A. Green's Pharmacy
	Mountain View	Winniger & Wagner
	Palo Alto	University Pharmacy
	San Jose	Curtis & Henkle Drug Co.
Santa Cruz	Santa Clara	Madden's Pharmacy
	Santa Cruz	Palmer Drug Co.
	Watsonville	Steinhauser & Eaton
Shasta	Anderson	Black's Drug Store
	Redding	Fowell Pharmacy Co.
Sierra	Downville	Downville Drug Store
	Loyalton	Loyalton Drug Co.
Siskiyou	Dunsmuir	Red Cross Drug Store
	Etna Mills	W. J. Balfrey
	Slisson	Mt. Shasta Pharmacy
Solano	Yreka	Avery Drug Co.
	Benicia	Benicia Pharmacy
	Dixon	California Drug Store
	Rio Vista	Rio Vista Pharmacy
	Suisun	Whitby & Rutherford
Sonoma	Vacaville	Vacaville Drug Co.
	Vallejo	Vallejo Drug Co.
	Healdsburg	Rathke's Pharmacy
Stanislaus	Petaluma	Young-Herold Drug Co.
	Ceres	Ceres Drug Co.
	Modesto	Maze Drug Store
	Newman	Parker Drug Store
	Oakdale	Endicott's Drug Store
Sutter	Turlock	Turlock Drug Co.
	Live Oak	Dr. I. W. Higgins
Tehama	Corning	Thompson's Drug Store
	Red Bluff	Elmore Pharmacy
Trinity	Weaverville	Dr. D. B. Fields
Tulare	Dinuba	McCracken's Pharmacy
	Exeter	Mixter Pharmacy
	Lindsay	Lindsay Drug Co.
	Orosl	H. L. Huntington
	Porterville	Claubes Pharmacy
	Tulare	Corner Drug Co.
	Visalia	The Visalia Drug Co.
	Woodlake	Woodlake Drug Co.

**Depositories for the Mailing Outfits of the Bureau of Communicable Diseases—
Continued.**

County	Town	Drug store
Tuolumne	Sonora	Union Drug Store
	Tuolumne	Higelow's Drug Store
Ventura	Nordhoff	Ojal Drug Store
	Santa Paula	Cauch's Drug Store
	Ventura	Pioneer Drug Store
Yolo	Davis	Campbell's Pharmacy
	Winters	Day's Drug Store
	Woodland	John V. Lelthold
Yuba	Marysville	Rubel's Drug Store
	Wheatland	Rooney's Drug Store

REPORT OF THE DIVISION OF ENTOMOLOGY.

By STANLEY B. FREEBORN, Acting Consulting Entomologist.

At the recent reorganization of the Bureau of Communicable Diseases it was deemed advisable to change the title of Consulting Parasitologist to that of Consulting Entomologist, so that the work hereafter described is that of the old Division of Parasitology now known as the Division of Entomology.

The work performed by the Consulting Entomologist consists largely of lectures, consultations and field and laboratory work. This work is done in co-operation with the College of Agriculture of the University of California, which has at all times very gladly furnished the services of the men doing the work. This combination of co-operation seems particularly fitting when we realize that the principal fields of endeavor of this division, the control of malarial mosquitoes and other insect and arachnid carriers of disease, are largely rural in their scope, with the result that their control means not only better health but better agriculture as well.

During the summer of 1916 Professor W. B. Herms, then Consulting Parasitologist, assisted by the writer, undertook a survey of northern California to determine the prevalence of anopheline mosquitoes in that part of the state. It was found that malarial mosquitoes were more widely distributed than had previously been supposed. All the counties in the northern part of the state were carefully covered and anophelines were taken in every county except Del Norte and at varying altitudes from sea level at Mare Island to 5,482 feet at Sierraville. In 1917 it was planned to complete the survey of the state by covering the southern half, but after a few weeks' work which disclosed conditions very similar to those found the year before in northern California it was deemed wise to discontinue the survey temporarily to co-operate with the Department Surgeon's office of the Western Department of the U. S. Army in a tour of inspection of camp sites located in California, devoting attention to the main sanitary features of the camps with particular emphasis on fly and mosquito control. This work took up the remaining time for the summer, although the work of the survey was augmented from time to time through the fall by week-end trips. In February, 1918, Professor Herms, the Consulting Entomologist, was called into the service as a captain in the Sanitary Corps of the National Army and the writer appointed as Acting Entomologist in his absence.

It was again planned for the present summer to finish the work of the mosquito survey of the state in order that our data might be complete.

It was found necessary, however, to temporarily abandon that work to undertake the more important task of supervising the control work being done in Los Angeles and Long Beach to check the salt marsh mosquitoes that were infesting the shipyards and fish canneries in that locality. In May of the present year the writer, associated with Mr. Edward T. Ross, the chief sanitary inspector for the State Board of Health, and assisted by Mr. Rodney F. Atsatt, a voluntary inspector for the board, took charge of the work to be done in the Harbor District of Los Angeles and Long Beach. We arrived too late to check the May brood that emerged three days after our arrival, but succeeded in practically eliminating the June brood. During the conduct of the work we took especial pains to instruct local men on all the technical points, with the result that after five weeks' intensive work we controlled the situation and trained competent local men to carry on the work after our departure with the same optimum results. I speak of this particular case in detail because it shows the advantage to be gained by personal supervision of the work to be done until such time as local men are able to carry it on just as successfully. This was our first opportunity to do this, for lack of time and funds has always made it imperative for us to visit a location, leave recommendations and trust the actual work to local authorities who may or may not have understood exactly what was needed. In this instance we had the opportunity to start the work along technically correct lines, demonstrate the possibility of actually controlling the mosquitoes and at the same time train local men to meet the situation after our departure.

Our survey work to date has pointed out one fact that I hope may lead to further investigations that may be of decided advantage in our malarial work. The anophelines are much more widely distributed than is malaria. With our present knowledge, however, we are forced to look upon every anopheline-infested district as a possible focus of malaria should carriers be introduced. Nevertheless there are many points in California where both carriers and anophelines (species capable of transmitting malaria in other sections) are present with an entire absence of endemic malaria. I hope to be able in the near future to have an opportunity to study this question in the field, for the determination of the factors governing the transmission of malaria by our anophelines would be of decided advantage, as we would be able to state whether the presence of anophelines in a given locality indicated danger from malaria or not, instead of considering dangerous all localities where anophelines occur in spite of the fact that endemic malaria has never resulted from their presence, although carriers were present.

Another research problem that would undoubtedly lead to very practical results would be a study of the complex that furnishes the breeding ground for the anophelines. There are very definite kinds of situations in which anophelines will breed. So characteristic are these pools that a trained observer can almost always prophesy the presence or absence of anophelines by merely glancing at the pool. It is barely possible that if we knew the factors that make certain pools attractive to anophelines, we might be able to alter them very simply and prevent further infestation.

The Mosquito Abatement Districts Bill has enabled a number of communities to organize antimosquito campaigns. Since June, 1916,

six new districts have begun to operate, while as many more are in the process of formation. An account of the formation of these districts is printed in the Bulletin of the California State Board of Health for April, 1918. Previous to the passage of this bill, antimosquito campaigns depended on the subscriptions and personal enthusiasm of a few public-spirited citizens of a given territory who realized the benefits to be accrued through systematic mosquito control. This type of finance and administration seldom proved effective, however, due to the inability to undertake the work on an extensive scale and the waning enthusiasm of the backers, who tired of financing a project for their neighbors' benefit without the latter's aid. In this way the passage of the Mosquito Abatement Districts Bill was a distinct step in advance, for it provided for the collection of a definite amount of money that could be accurately budgeted and also furnished a means of administration. It is of course very difficult to make a general statement relating to the amount of money necessary to control mosquitoes, for conditions vary in different parts of the state and with different species of mosquitoes, but an average of a large number of campaigns in California shows that \$250.00 per square mile per year is the average cost, decreasing somewhat with succeeding years as permanent control is inaugurated. This cost in order to be met through the medium of the Mosquito Abatement Districts Bill, which limits the taxation to ten cents on a hundred dollars, requires therefore an average valuation of nearly \$400.00 per acre. As improved agricultural land in California averages \$180.00 per acre, it is consequently necessary in almost every case to include a municipality in the district in order to raise sufficient funds to insure success. The anopheline or malaria-bearing mosquito is largely rural and malaria consequently a rural disease, but here where the need for control is the most urgent the present bill offers very little help. A modification of the bill to provide for a higher tax rate is not to be considered, for the added taxes would be oppressive as well as prohibitive. The only solution seems to be some form of state aid, either in the form of direct funds or intensive supervision. Another point in connection with the mosquito abatement districts concerns the attitude of the State Board of Health. When a community intimates the possibility of the formation of a district, a representative of this division generally visits the territory, outlines the boundaries of the district, makes a public address on the desirability of the project, the Utopian results to be gained and the method of procedure. Under the present system time is not available to do more, with the result that enthusiasm wanes or if the district is actually started it is very possible that poor management squanders or wastes the money without producing results, and the State Board of Health as the instigator of the project is blamed for the failure with the attendant loss of prestige. If it were possible for this division to actually have a representative who could stay with a district during its process of formation and later to start the work along the proper lines and train the local officer much of the disfavor that has fallen upon the advisability of forming districts would be eliminated.

REPORT OF THE DIVISION OF PARASITOLOGY.

By WILLIAM W. CORT, PH.D., Consulting Helminthologist.

Introduction.

California, on account of a semi-tropical climate and a close relation to oriental and tropical countries, must take measures for protection against the introduction and spread of diseases caused by animal parasites. In recognition of this fact the Division of Parasitology (at first called the Division of Biology) of the Bureau of Communicable Diseases was established in June, 1917, to take up the problems, related to the diseases caused by intestinal parasites, of man in California.

Two laboratories and an office were set aside for this division by the University of California in connection with the Department of Zoology in East Hall on the University Campus. Dr. C. A. Kofoed, Professor of Zoology, was appointed Consulting Biologist and Dr. W. W. Cort, Assistant Professor of Zoology, Associate Biologist. Later when the name of the division was changed to the Division of Parasitology these titles were changed to Consulting Parasitologist and Consulting Helminthologist. In February, 1918, Professor C. A. Kofoed received the commission of Major in the Sanitary Corps of the United States Army and was given leave of absence by the Board of Health for the duration of the war.

The relation to the Department of Zoology of the university is of value to the Division of Parasitology not only because it gives the State Board of Health the services of men in the Department of Zoology and the use of the laboratories and certain equipment, but also because it correlates with the practical work of the division researches which are being carried on in the Department of Zoology in protozoology and helminthology.

The program of the Division of Parasitology includes the investigation of diseases of man in California caused by intestinal parasites, and the control and eradication of such diseases wherever found. During the first year most of the time of the division was given to the campaign for the eradication of hookworm from the mines of California, which had been carried on for the two previous years under the direction of the State Hygienic Laboratory. Besides the hookworm campaign the division has started work on general problems of parasitic infections among the oriental and Mexican elements of the population of California. The Division of Parasitology is especially equipped for the making of diagnoses by fecal examinations. Experimental work, related to hookworm in mines, has also been taken up as part of the program of the division.

Hookworm Campaign in the Mines of California.

In September, 1917, the campaign for the eradication of hookworm in the mines of California, which had been carried on for two years by the State Hygienic Laboratory, was turned over to the Division of Parasitology. This work has taken up most of the time and energy of the division since that time.

The program followed in the first two years of this work has been carried out with some modifications. The program of the hookworm campaign is as follows:

(1) To make fecal examinations of all miners in regions where hookworm has been found to exist;

(2) To make preliminary surveys in new mining regions to determine whether foci of infection of hookworm diseases are present;

(3) To make arrangements for treatment of infected men;

(4) To re-examine treated men;

(5) To give wide publicity to sanitary measures which will prevent the spread of hookworm;

(6) To carry on experimental investigations in relation to the problem of hookworm in mines.

Whatever progress has been made has been possible on account of the co-operation of a number of different agencies; the State Compensation Insurance Fund by assuming the responsibility for treatments in mines which it insures has made possible a large proportion of the treatments. The Industrial Accident Commission has rendered important service in publicity through its various agents, has co-operated in mine inspection and has furnished much valuable information. The California Metal Producers Association by its endorsement and active co-operation in the work has done much to secure the co-operation of the mine operators and superintendents. The Federal Bureau of Mines, through the Bureau of Mines Car, No. 1, has given service in publicity and has made possible the making of surveys in a number of new regions. The great majority of mine operators and superintendents have co-operated cordially in the work and the attitude of most of the miners has been favorable, whenever they were made to understand the exact significance of the work.

Record of Hookworm Examinations and Treatments According to Counties.

Counties	Total examinations	Positive	Treated	Re-examinations		Positives gone before treatment
				Plus	Minus	
Amador County	1,465	264	85	25	19	75
Calaveras County	401	12	4	1	1	1
Inyo County	24	1	0	0	0	-----
Kern County	24	0	0	0	0	-----
Nevada County	233	0	0	0	0	-----
San Bernardino County	19	0	0	0	0	-----
Shasta County	28	0	0	0	0	-----
Tuolumne County	131	11	9	6	3	4
Examinations from towns near mines	25	0	0	0	0	-----
Totals	2,350	288	98	32	23	80

The table, which is included, gives an idea of the extent of the examinations and treatments for the year. The attempt has been made to make the surveys in Amador, Calaveras and Tuolumne counties as complete as possible. The unsettled conditions of labor and the resulting rapid shifting of miners has made it impossible to complete the survey of a mine at any given time. Whenever possible, arrangements have been made with the mines, after the completion of the initial survey, to send samples from all new men. The examinations recorded

for the three counties, especially Amador, represent a very large proportion of all the miners. The surveys outside of these counties are more scattered and represent attempts to locate scattered foci of infection. An analysis of the table is very encouraging, since it indicates that hookworm in California is probably localized in a limited region and not widespread in the mining regions of the state. This supposition is also supported by data from the first two years of the campaign and a review of conditions in mines in other parts of the state.

Reasons for this localization are complex and probably depend upon the physical and chemical conditions of the mines underground, the characteristics of the men employed and the underground sanitation of the mines with respect to soil pollution. An analysis of the past history of the positive cases in Calaveras and Tuolumne counties showed that most of them had recently come from heavily infected mines in Amador County in which there is evidence that hookworm has become endemic. This condition of things is encouraging, for it suggests that by intensive work in these infected areas it may be possible to eradicate entirely hookworm disease from the mines of the state. It is, of course, possible that the more extended survey which is being carried on will show new foci of this disease in mines in other parts of the state.

The fact that the State Board of Health does not have direct control over the treatment of hookworm cases found in the mines has made it impossible to complete this phase of the work as rapidly and completely as the examinations. The treatments have been carried out through the agency of the State Compensation Insurance Fund, other insuring bodies or, in some cases, by the mines themselves.

Re-examinations to determine the success of the treatments have been made whenever possible. This phase of the work is being pushed energetically at the present time and it is expected that a much larger proportion of the infected men, listed in the report, will be treated and re-examined in the next few months. This part of the work has been greatly handicapped by the restlessness and shifting of the miners. A considerable portion of the infected men, as shown by the table, moved away before treatment or between treatment and re-examination. This escape of infected men before cure is a serious matter in relation to the spread of the disease and attempts are being made to trace them. It seems probable that a number of these men moved after they found that they were infected to escape treatment.

The series of fecal examinations recorded from the families of miners and other individuals residing close to infected mines, but not going into them, is significant. So far in our examinations and in those of the previous two years there is no evidence that the hookworm disease has ever been contracted in these regions except by men who go underground in the mines or who handle material from the mines. This supports the view that hookworm in the mines of California is an occupational disease depending for its spread upon peculiar conditions underground in these mines, and is not a menace to the general population of the surrounding districts.

The publicity work of the campaign has been carried on for the purpose of informing the mine operators and miners in regard to the importance of the work, and with a view to the improvement of underground toilet systems of the mines in order to prevent soil pollution. The attempt has been made to bring the importance of the hookworm

to the miners and mine operators by correspondence with mine operators and superintendents, by lectures and talks on the hookworm and by personal interviews between the field agent of the Division of Parasitology and mine superintendents and men. The Bureau of Mines car, No. 1, carried a hookworm exhibit in California and a first-aid instructor of the Industrial Accident Commission has included a short lecture and exhibit on hookworm in his course. In fact, the methods of the hookworm campaign are becoming very widely known in the regions where the work has been intensively carried on, and a widespread interest has been created in the campaign.

Since hookworm can be spread only by soil pollution in the mines, the improvement of the underground toilet systems of the mines in the hookworm district is a most important step in the eradication of the disease. Inspections of underground toilets in the mines have been made by inspectors of the Industrial Accident Commission, by the District Health Officer and the field agent of the Division of Parasitology. Recommendations for improvements have been made when needed. Since it was found that it was difficult to find on the market a suitable underground mine toilet, a seatless toilet was devised by the Division of Parasitology and the Bureau of Sanitary Engineering. A model of this toilet was exhibited on the Bureau of Mines car while in the hookworm district and blueprints and photographs have been sent out to a number of mine superintendents. Another underground toilet devised by the superintendent of one of the mines to protect his mine against the spread of hookworm has also been given publicity. Blueprints of this toilet and an account of the sanitary arrangements in this mine have been distributed to mine superintendents. Special Bulletin No. 28 of the State Board of Health, "Mine Sanitation for the Prevention and Eradication of Hookworm Disease," is devoted to this subject and has been widely distributed to mine superintendents throughout the state. As a result of these efforts and those of the first two years of the campaign, marked improvements in the underground toilets of the mines have been made all through the hookworm district. Also there is developing a strong feeling, not only among mine superintendents but also among the men, against soil pollution in the mines.

Certain important researches in connection with hookworm in mines have been made a part of the program of the division. A series of experiments is nearing completion on the effect of common salt on hookworm eggs and larvæ, to determine its value as a disinfecting agent. These experimental studies will soon be ready for publication. They show that common salt will, in sufficient quantities, kill the hookworm larvæ, and that it is of value in disinfecting small highly infected areas of mine soil. Experiments are also under way on the effect on the development of hookworm of water containing copper salts.

Other Activities.

Although the hookworm campaign has taken up most of the time of the Division of Parasitology since its organization, certain other projects have been undertaken. A number of fecal examinations have been made for physicians of the state. Most of these examinations have been negative, but the monthly reports of the division show cases of ascaris, trichuris, oxyuris, dibothriocephalus, schistosoma japonicum, Entamoeba

coli, *Strongyloides stercoralis* and *hymenolepis*. It is expected that an increasingly large number of physicians will take advantage of the opportunity for fecal diagnosis afforded by the division.

The first project undertaken by the Division of Parasitology was that of fecal examinations to determine the prevalence of hookworm and other parasitic infections among the Mexican populations of the state. A total of seventy-four fecal examinations for parasitic worms were made from Mexican laborers near Los Angeles. These examinations were all negative except two cases of the dwarf tapeworm, *hymenolepis*. This work was not continued, on account of taking over the hookworm campaign in the mines. The problem, however, demands further attention and is on the program of the Division of Parasitology.

There is a considerable amount of evidence that the protozoan dysenteries are more widely spread and of greater significance to California than is ordinarily believed. Last summer an attempt was made to discover whether cases of summer complaint, prevalent in California, were due to parasitic flagellate. No positive results were obtained in this investigation. What few examinations for protozoa which have been made have shown only a percentage of *entameba coli*. The presence of amoebic dysentery in California has been long known through scattered case records. In the last few months an investigation has been carried on to determine the amount of this infection in the hospitals of the state. The investigation is still incomplete, but the records so far gathered show that numbers of cases of amoebic dysentery are treated in our hospitals each year. Most of these appear to have originated outside of the state, in the Philippines, Hawaii, Mexico or other parts of the tropics or Orient. These records, however, show some cases which have undoubtedly originated in California. Further work is planned for the future in connection with the prevalence of this disease.

The parasitic diseases of the immigrants from oriental countries offer important problems to the health of the state. This whole question is practically uninvestigated. It is known, however, that numerous cases of parasitic disease have been brought into the state by entering immigrants. There is practically no evidence in regard to the prevalence and spread of these diseases at the present time. The Division of Parasitology is attacking this important problem. Special Bulletin No. 29, "Dangers to California from Oriental and Tropical Parasitic Diseases," was written to bring this matter to the attention of the physicians of the state. Data and case records are also being gathered on this subject. The division further plans to make fecal examinations this fall of orientals from the "Delta" region and rice fields.

LABORATORY TECHNIQUE.

ANTHRAX.

A diagnosis of anthrax is given only when microscopical and cultural examinations are confirmed by animal inoculation.

If the specimen received is dried blood it is emulsified in salt solution; if an ear, a vein is dissected out so as to obtain the blood; if tissue, other than an ear, the surface is seared, an incision made so as to avoid surface contamination, and a small particle removed and emulsified in salt solution.

Microscopical examination.—Direct smears from blood or tissue stained with methylene blue show bamboolike rod-shaped bacilli.

Cultural examination.—A tube of nutrient broth is inoculated with the blood or tissue emulsion obtained as stated above. Three tubes of agar are inoculated with the same material, making three dilutions (loop method), and plates poured. After twenty-four hours incubation the broth is examined for the typical stringy cottonlike growth in the bottom of the tube and the agar plates for the furlike filamentous colonies.

Animal inoculation.—One to two cc. of a saline emulsion of blood or tissue are inoculated intramuscularly or subcutaneously into a guinea pig. If the guinea pig dies cultures are made from the heart blood into broth and agar as above. After twenty-four hours incubation these cultures are examined, smears are made from typical colonies, and if Gram positive, square-ended bacilli in chains with spore forms are found a diagnosis of anthrax is given.

BOTULISM.

The technique used in this laboratory for the identification of *B. botulinus* is that recommended by Dr. Ernest C. Dickson and is as follows:

In examining fruits and vegetables the juice is centrifuged and the sediment is examined for spores. In examining organs of chickens, tie off the crop and gizzard, add the contents to sterile water, and incubate to develop spores. Glucose broth, brain and glucose agar are inoculated with large amounts of the suspected material; immediately before inoculating, both suspected material and culture media are boiled for at least ten minutes. The fluid media, broth and brain can be quickly cooled by plunging into tap water, but the agar is cooled only to about 45° C. so that the material can be thoroughly mixed with the fluid agar. Paraffin or paraffin oil is used to seal the media to insure anaerobic conditions. All culture tubes are incubated at from 26–28° C., the optimum temperature of *botulinus* bacilli.

The points essential for the identification of *B. botulinus* are the following:

1. Demonstration of large Gram positive bacilli with rounded ends and terminal spores.
2. Anaerobic growth of characteristic appearance in glucose agar cylinders with formation of gas and fragmentation of the medium.
3. Blackening of brain medium.
4. Characteristic growth in glucose infusion broth with the production of a virulent toxin demonstrable in filtered broth by subcutaneous inoculation into guinea pigs. One cubic centimeter of the broth is used. The animal dies in twenty-four hours. There is first a collapse and the legs are sprawled straight out. At autopsy the brain is hemorrhagic.

Glucose agar cultures are examined for characteristic colonies in forty-eight to seventy-two hours, but if negative are not discarded for at least two weeks. Glucose broth cultures are allowed to incubate for about one month before they are discarded. Cultures of *B. botulinus* have the characteristic odor of rancid butter due to the production of butyric acid.

DIPHTHERIA.

Swabs from the throat and nose are sent to the laboratory for diphtheria examinations. The swabs are planted on Loeffler's blood serum and after about sixteen hours incubation smears are made, air dried, fixed by heat and stained with modified Ponder's stain. The formula for the stain is as follows:

Toluidin blue	1.0 gm.
Alcohol, 95 per cent.....	10.0 c.c.
Glacial acetic acid.....	25.0 c.c.
Distilled water	500.0 c.c.

The fixed smears are immersed in this stain in staining jars for at least five minutes. There is no danger of overstaining. A positive diagnosis is made on finding granular, barred or solid diphtheria bacilli. The granular types show purple metachromatic granules with a blue body; the barred types show blue bars with deeper staining poles, and the solid types show blue bodies with characteristic grouping. Practically all organisms except diphtheria bacilli and certain cocci take this stain very faintly so that the diphtheria organisms stand out against a faint blue background and are not confused with *B. hoffmanni* or *B. xerosis*.

DYSENTERY.

From a specimen of feces to be examined for dysentery bacilli, mucous flakes are fished and dallied out on plates of eosin methylene blue lactose agar made according to the following formula:

Meat infusion (10 lbs. of veal to 15 liters of distilled water).	
Peptone	1 per cent
Sodium chloride	5 per cent
Agar (sheet) ..	2 per cent

Adjust first to +0.5 to phenolphthalein, then to 6.6 H.P., using dibromothymolsulphonaphthalein as an indicator and adjusting to that point which gives a grass green shade. This shade has been shown to be 6.6 on the hydrogen ion scale.

Add to the sterilized medium:

Lactose	1 gm. per 100 c.c.
0.2 per cent aqueous solution eosin	2 c.c. per 100 c.c.
0.5 per cent aqueous methylene blue	2 c.c. per 100 c.c.

Sterilize five minutes in the Arnold, cool before pouring plates.

Transfer a small flake of mucus to the first plate, add about two drops of saline, spread over the entire surface with a dalli; then carry on to three or four plates, using the same dalli. Incubate twenty-four hours. Dysentery colonies are transparent, moist, with a slightly flattened surface and have a faint purple color. Coli colonies have deep purple opaque centers.

The suspicious colonies are planted onto agar slants and the following sugars: lactose, mannit, dextrose and maltose.

Dysentery bacilli give acid in dextrose, but not in the other sugars.

Paradysenteries give the following reactions:

	Hiss-Russell	Flexner
Lactose -----	no acid	no acid
Saccharose -----	no acid	acid
Mannit -----	acid	acid
Dextrose -----	acid	acid
Maltose -----	no acid	acid

A Gram negative nonmotile bacillus is grouped according to the fermentation reactions and agglutinated with the specific serum.

GONOCOCCUS INFECTION.

Smears received at the laboratory are stained by Gram's method. If two smears from the same source are received one is stained with methylene blue for morphology.

The formulæ of the Gram's stain and technique used are as follows:

Carbol gentian violet:	
Saturated alcoholic gentian violet-----	10 c.c.
Phenol 2 to 2.5 per cent-----	100 c.c.
Gram's Iodine:	
Iodine -----	1 gm.
Potassium iodid -----	2 gms.
Distilled water -----	300 c.c.
Counter stain:	
0.5 per cent aqueous solution of safranin.	

Stain the smears with carbol gentian violet one minute; wash off excess of stain with water, add Gram's iodine for one minute, decolorize with 95 per cent alcohol until purple color disappears. Counterstain with safranin one minute.

Positive laboratory findings are based upon the presence of intracellular Gram negative diplococci.

Inconclusive findings are based upon the presence of extracellular Gram negative diplococci or upon the presence of very many pus cells.

HOOKWORM AND OTHER INTESTINAL WORMS.

For routine diagnosis of suspected intestinal worms the centrifuge method is most satisfactory. A piece of feces about the size of a walnut is stirred thoroughly in about five times its bulk of filtered water. A cyclone mixer of the type used in soda fountains may be employed to ensure thorough mixing. This mixture is then filtered through a piece of cheesecloth to remove coarse particles. The residue on the cheesecloth should be examined for tapeworm proglottids or whole round worms. The mixture is then centrifuged to get rid of the lighter particles, oils, etc. The centrifuging should be repeated three times. After each time the liquid should be poured off and the residue mixed with filtered water. Ten to fifteen seconds at a speed of one thousand revolutions per minute is enough to throw down the eggs.

This residue which contains parasite eggs, mixed with the heavier particles, must be spread out on a slide for study in sufficient water so that the material will not be too dense for microscopic examination. A medium power of the microscope is used and a mechanical stage, so that all parts of the preparation can be examined. Two or three preparations, depending on the size of the cover glasses, should be examined from each case before making the diagnosis.

INTESTINAL PROTOZOA.

The diagnosis of intestinal protozoa is made by examination of feces. If fecal material can be obtained in fresh condition the simple smear method is best. A small piece of the feces is smeared on a slide with a toothpick or similar instrument. Three slides should be made for each case. If the stool is solid at least one slide should be made from slime on its surface. The material on the slide can be thinned to the proper consistency for examination with filtered water. The preparation is then covered with a thin cover glass and examined with the high power of the microscope. The use of the mechanical stage makes it possible to cover all parts of the field. Intestinal flagellates and amebæ or their cysts can be distinguished in such a preparation. Diagnosis by this method is safe only with fresh material, since parasitic protozoa disintegrate rather quickly.

When fecal specimens are to be sent to the laboratory from a distance a special outfit is sent out, viz: a small wide-mouthed bottle partly filled with Schaudinn's fluid (one part absolute alcohol and two parts saturated solution of mercuric chloride) and six cover glasses. To make the preparation on these cover glasses a small amount of the fresh stool is placed between two of the cover glasses so that it will spread out in a thin film over their surfaces; the cover glasses are then separated and dropped into the Schaudinn's fluid, which has been heated to 50° to 60° C. Six cover glasses from three different parts of the stool should be prepared in this way. The cover glasses are left in the fixing fluid for shipment but should be shipped immediately. In the laboratory these fixed smears are first washed in 50 per cent alcohol and are then transferred to a 70 per cent alcohol to which a sufficient amount of tincture of iodine has been added to give it the color of port wine. The smears are then run through the grades of alcohol down to water, placed in 1 per cent iron alum for from one to two hours and stained in 0.5 per cent aqueous solution of iron haematoxylin. If the stain is too heavy the preparations may be decolorized in the 1 per cent iron alum. They are then washed, run up through the grades of alcohol to 100 per cent and then to xylol and finally mounted in balsam. This gives a permanent preparation which can be examined with the oil immersion lens if necessary.

LEPROSY.

Smears for microscopical examinations for leprosy are stained in the following manner:

Flood the slide with carbol fuchsin and heat gently over a small flame until it steams for about 3-5 minutes.

Decolorize about 30 seconds with acid alcohol.

Wash in water and counterstain with Loeffler's methylene blue.

The formulæ for the stains used are as follows:

Carbol fuchsin:

Saturated alcoholic basic fuchsin.....	10 c.c.
Phenol 5 per cent.....	90 c.c.

Acid alcohol:

Nitric acid concentrated.....	3 c.c.
Alcohol 95 per cent.....	97 c.c.

Loeffler's methylene blue:

Saturated alcoholic methylene blue.....	30 c.c.
1/10,000 solution potassium hydroxide.....	100 c.c.

MALARIA.

Blood smears to be examined for malaria are stained with Wright's stain. At least one-half hour, and usually much longer, is spent searching for malarial parasites before a negative report is given.

MENINGITIS (EPIDEMIC).

Spinal fluids sent to the laboratory for examination for epidemic meningitis are centrifuged, the sediment smeared on slides, air dried, fixed with heat, and stained by Gram's method. Gram negative intracellular diplococci are searched for and if found a tentative positive report is given. If the spinal fluid is suitable it is plated on sheep serum-dextrose agar and examined by the same procedure as nasopharyngeal smears, the technic of which is as follows:

Nasopharyngeal swabs are taken on wires bent at an angle of about 45°. The swab should be taken by a specialist so that contaminating organisms from the mouth may be reduced to a minimum. Effective results depend upon taking swabs at or very near the laboratory so that they may be planted on to warm plates and immediately placed in the incubator.

As soon as the swabs are taken the mucus is deposited at the edge of a sheep serum-dextrose agar plate, the medium being made according to the following formula:

Ordinary 3 per cent veal agar containing 1 per cent peptone and 0.5 per cent sodium chloride.

Dextrose, 1 per cent.

Adjust reaction carefully to 0.4 acid to phenolphthalein (cold titration).

To 500 c.c. of perfectly clear agar add 100 c.c. of sheep serum water made by mixing one part of perfectly clear fresh sheep serum with three parts of distilled water. Sterilize in the autoclave forty minutes at 15 pounds pressure.

After depositing the mucus on a plate, a bent sterile glass rod is used to spread it. If the culture is properly taken one plate is sufficient, but it is better to use two. Plates should be placed in the incubator at once.

At the end of twenty-four hours incubation the plates are looked over and suspicious transparent pearly-gray colonies with regular margins are marked, smears are made and stained by Gram's method. Colonies showing a Gram negative diplococcus are planted onto carbohydrate sheep serum agar slants, prepared as follows:

3 per cent sheep serum agar, as above.

Andrade's indicator 1 c.c. per 100 c.c. medium.

1 per cent carbohydrate, using the following: glucose, maltose, saccharose, levulose, galactose.

It may be advisable at times to plant from the colony onto egg medium slants, and from this transplant onto the carbohydrates. The egg medium is made as follows:

Eggs are washed thoroughly with soap and water. Break the shell and stir yolk and whites very thoroughly. Strain through sterile cheese cloth and distribute by means of sterile funnels into small test tubes. Heat slowly to 70° C. to expel the air. Solidify at a temperature of 75° C. Sterilize on two consecutive days in Arnold steamer at a temperature of 90-100° C.

Those Gram negative diplococci fermenting only maltose and dextrose are agglutinated with a known antimeningococcic serum in dilutions of 1/100 and 1/200.

PLAGUE.

If the case is bubonic plague make smears and cultures from material drawn from a bubo with a hypodermic syringe, if pneumonic plague, from the sputum, and if septicæmic plague, from the blood.

Smears are stained with carbol Thionin or dilute Gentian violet and show typical coccobacilli with the characteristic bipolar staining and involution forms. These involution forms, associated with the typical bacilli, are diagnostic.

Tubes of plain agar, 3 per cent salt agar and tubes of broth, with a few drops of oil on the surface, are inoculated with the suspected material. Smears from the growth on plain agar show small typically slender rods—not coccoid bacilli: smears from salt agar, the involution forms, while in the broth culture is found the characteristic stalactite growth, hanging from the under surface of the oil.

Two guinea pigs are always inoculated—one by smearing the material on the closely shaven skin of the animal and a second one subcutaneously by pocket inoculation. Inoculated animals are housed in flea-proof containers and are closely watched for a period of fifteen days.

All animals, whether dying or killed within fifteen days, are posted and the diagnosis confirmed by the macroscopic lesions such as buboes, enlarged spleen, nodular spleen or hemorrhagic conditions, as well as by the microscopic examination of the spleen and heart blood and by cultures.

PNEUMONIA—TYPE DIAGNOSIS.

The culture method used in this laboratory is that of Avery with a modification suggested by Dr. K. F. Meyer, consulting bacteriologist of the bureau.

Several kernels are selected from the specimen of sputum; these are washed four times in sterile saline and are then ground in a sterile mortar with sterile sand. After the sputum is well broken up about 1 c.c. of broth is added and after mixing thoroughly the supernatant fluid is drawn off with a capillary pipette. This is discharged into a tube of glucose blood broth and incubated for five hours in the 37° C. water bath or in the incubator over night. At the end of this time, smears are made and stained with Gram's and Hiss' capsule stains. If a good many organisms are present the specimen is centrifuged at low speed (if the red blood cells have settled out during incubation this is not necessary). The clear fluid is pipetted off and centrifuged at high speed; the supernatant fluid is drawn off and the sediment resuspended in sterile saline until the resulting suspension is turbid.

Agglutinate this antigen with known Types 1, 2, and 3 pneumococcic antisera using 0.3 c.c. of undiluted serum and 0.3 c.c. of the antigen. Incubate in the water bath at 37° C. for one hour. Put in the icebox over night. Before reading the results in the morning, allow the tubes to stand at room temperature for about thirty minutes.

In order to avoid cross agglutination, if this occurs, 0.5 c.c. amounts of the antigen, or suspension of suspected pneumococci, are set up with 0.5 c.c. amounts of the following dilutions of the antipneumococcic sera,

serum I, 1 to 20, serum II, undiluted, serum II, 1 to 20 and serum III, 1 to 5.

When setting up the agglutinations make a bile control by adding 0.1 c.c. of bile to 0.5 c.c. of broth culture. Plate out after twenty minutes on blood agar to see if the organisms present are bile soluble.

It is well to plate out from the original specimen or from enrichment medium (glucose blood broth) on blood agar. Pick suspicious colonies after twenty-four hours incubation. Identify by Gram's and Hiss' capsule stains.

The above culture method of identifying the pneumococcus should be confirmed by mouse inoculation when possible.

RABIES.

Heads of suspected animals are opened and the hippocampus and a part of the cerebellum are removed. A small piece of the center of the hippocampus, taken out by cross sectioning the same, is pressed out between two slides.

These smears are allowed to air dry, fixed by heat and stained with a modification of William's stain:

Saturated alcoholic methylene blue-----	5 drops,
Distilled water -----	10 c.c.
Saturated alcoholic fuchsin-----	3-5 drops,
or until stain is slightly reddish purple.	

The slides are covered with this stain, warmed slightly over a small flame, and then washed and dried.

Microscopical examinations are made for the presence of Negri bodies. These are magenta colored, sharply outlined, regular bodies, containing blue granules. It is always preferable to find intracellular Negri bodies if possible before giving a positive diagnosis. (At least six to eight slides or more are examined before a negative report is given.)

Negative specimens are no longer inoculated into animals as the length of time for the development of symptoms is too great to allow a person who has been bitten to wait for treatment. Therefore all persons who have been bitten by animals are advised, in case Negri bodies are not found, that the question of treatment must be decided on the symptoms of the animal at the time of the biting.

ROCKY MOUNTAIN SPOTTED FEVER.

Blood from a suspected case is drawn from a vein, immediately added to a 10 per cent sodium citrate solution in the proportion of 9 to 1 and thoroughly mixed: 1 to 5 c.c. of the citrated blood are inoculated intraperitoneally into male guinea pigs. The temperature of the guinea pigs is taken before inoculation and twice daily afterward. A positive report is given if the inoculated animal shows the characteristic temperature curve and scrotal swelling and hemorrhage.

SYPHILIS.

Reagents—All glassware must be free from acid or alkali, as acidity or alkalinity give false reactions. All glassware is rinsed in 1 per cent hydrochloric and then in distilled water and sterilized.

Serum—The specimens to be tested are sent to the laboratory in an outfit containing two small sterile vials. As it is requested that the

serum be removed from the blood clot, one vial is for the blood and the second for the serum. No bleeding of persons is done at the laboratory.

Antigen—The antigen is Noguchi's acetone insoluble fraction of beef heart prepared as follows: Finely minced beef heart is weighed and covered with ten times the weight of 95 per cent alcohol; the mixture is placed in the incubator at 37° C. for about two weeks and shaken vigorously twice daily. Filter through filter paper and evaporate to dryness. The residue is taken up in a large quantity of ether, the solution filtered and clear filtrate evaporated to dryness. The residue is again taken up in as small a quantity of ether as is required to dissolve it. To this solution add five volumes of acetone and place in the icebox over night to allow the whitish precipitate to settle. The greater part of the acetone is removed by syphonage and the remainder allowed to evaporate. A mass of sticky yellow brown material remains. This mass is weighed and dissolved in a sufficient quantity of methyl alcohol to make a 3 per cent solution. For use a 10 per cent solution is made up and titrated. The antigen is fairly stable but should be titrated at least every six weeks.

Complement—The complement is the serum from the blood of at least three guinea pigs. The blood is obtained from the heart by aspiration and the pigs are bled again in about four or six weeks. Normal guinea pigs are always used and in no case a gravid pig bled for complement as the serum of such a pig is apt to be weak.

The blood is centrifugalized and kept in the icebox until used. A 10 per cent dilution of complement in physiological salt solution is used throughout the test.

Eythrocytes—The sheep is bled and the volume of blood to be washed marked on the centrifuge tube. Saline solution (about three times the volume of sheep blood) is added and thoroughly mixed. After centrifugalizing, the supernatant fluid is drawn off by means of a pipette fitted to a suction pump. More saline is added to the cells and again thoroughly mixed in order to wash well the entire lot of cells. This is repeated at least three times and finally the cells brought up to a volume equal to that of the whole blood. The sheep cells are always washed on the day of the test. A 10 per cent suspension of the volume of the whole blood is used throughout the test.

Amboceptor—The amboceptor is the serum of rabbits which have been given several successive inoculations of sheep cells. Rabbits are inoculated intravenously on three successive days with thoroughly washed sheep cells. The doses being 1 c.c. and 2 c.c., respectively, of a 50 per cent suspension of the volume of the whole blood which has been slightly heated in the incubator for about one-half to three-fourths of an hour. A second series of injections is started on the fifth day after the last injection of the previous series. After waiting for six days a specimen of blood for a trial titration is taken by bleeding the rabbit from the marginal vein of the ear. If the titer of the serum is sufficiently high, the rabbit is bled to death from the carotid. If the titer is not satisfactory a third series of injections is given. This usually produces a very potent serum. The amboceptor used in this laboratory at present has a titer of 1-6000. The serum, preserved with .5 per cent phenol, is stored in small sealed ampoules.

Saline—Physiological salt solution 0.85 per cent to 0.9 per cent is used throughout the test, in washing blood and in diluting all reagents.

Standardization of Reagents—Patient's Serum—0.4 c.c. of the human serum to be tested is inactivated in an electrically regulated water bath at 56° C. for one-half hour. To each tube add 1.6 c.c. of the 10 per cent suspension of washed sheep cells and incubate in the water bath at 37° C. for one-half hour. These cells absorb what natural sheep amboceptor there may be present in the serum. After centrifugalizing, the supernatant fluid (diluted serum) is used in the test.

Antigen—The antigen is titrated for complementary, antigenic and anticomplementary properties. It is first tested for complementary properties by incubating in the water bath at 37° C. for one-half hour, 0.2 c.c. of antigen, 0.2 c.c. of a determined dilution of amboceptor, 0.2 c.c. of sheep cells and 0.4 c.c. of saline. If hemolysis occurs the antigen is discarded but if there is no hemolysis the two final tests are performed.

To test for antigenic properties 0.1 c.c. of the following dilutions of antigen are set up: 1/2, 1/3, 1/4, 1/5, 1/6, 1/8, 1/10, 1/12, 1/16, 1/20, 1/24, 1/32, 1/40, 1/48, 1/64, 1/80, 1/96; 0.2 c.c. of a known syphilitic serum (prepared as for the test—see above) and 0.2 c.c. of a 10 per cent solution of complement are added and the tubes incubated in the water bath for one hour at 37° C. Then 0.2 c.c. of the determined dilution of amboceptor, 0.2 c.c. of a 10 per cent suspension of cells, and 0.1 c.c. of an 0.85 per cent solution of saline are added and the tubes reincubated for one-half hour. To test for anticomplementary properties the same technic is followed as in testing for antigenic properties, but using a known normal serum in place of the syphilitic serum. As a good antigen must have a wide range, the dilution used in the test is an average between the smallest dilution showing inhibition with a known negative serum and the highest dilution giving fixation, or the antigen unit.

Amboceptor—Preliminary titrations of a new amboceptor are made to establish a standard dilution. This is done by incubating in the water bath at 37° C. for one hour, 0.1 c.c. varying dilutions (from 1/100 to 1/10,000) of amboceptor, 0.2 c.c. of a 10 per cent suspension of sheep cells, 0.2 c.c. of a 10 per cent solution of complement and 0.5 c.c. of physiological salt solution. The dilution showing complete hemolysis in one hour, reading the tubes at frequent intervals to determine the rapidity of the reaction, is the determined dilution of the amboceptor.

The amboceptor is titrated daily before each test according to the following table:

Number of tube Amboceptor		Complement 10 per cent	Cells 10 per cent	Saline 0.85 per cent
1	1:3000 .1 c.c.	.2 c.c.	.2 c.c.	.5 c.c.
2	1:4000 .1 c.c.	.2 c.c.	.2 c.c.	.5 c.c.
3	1:5000 .1 c.c.	.2 c.c.	.2 c.c.	.5 c.c.
4	1:6000 .1 c.c.	.2 c.c.	.2 c.c.	.5 c.c.
5	1:7000 .1 c.c.	.2 c.c.	.2 c.c.	.5 c.c.
6	1:8000 .1 c.c.	.2 c.c.	.2 c.c.	.5 c.c.

The tubes are incubated in the water bath at 37° C. for one-half hour and readings made at fifteen minute intervals.

It will be seen from the table that fewer dilutions are used than in the preliminary titration, two or three above and two or three below the determined dilution being sufficient.

Complement—0.2 c.c. of a 10 per cent dilution is used in the test, but very often the complement is titrated daily as well as the amboceptor, according to the following table:

Number of tube	Complement 10 per cent	Amboceptor determined dilution	Cells 10 per cent	Saline 0.85 per cent
1 -----	.05 c.c.	.2 c.c.	.2 c.c.	.55 c.c.
2 -----	.1 c.c.	.2 c.c.	.2 c.c.	.5 c.c.
3 -----	.15 c.c.	.2 c.c.	.2 c.c.	.45 c.c.
4 -----	.2 c.c.	.2 c.c.	.2 c.c.	.4 c.c.
5 -----	.25 c.c.	.2 c.c.	.2 c.c.	.35 c.c.
6 -----	.3 c.c.	.2 c.c.	.2 c.c.	.3 c.c.
7 -----	.4 c.c.	.2 c.c.	.2 c.c.	.2 c.c.
8 -----	.5 c.c.	.2 c.c.	.2 c.c.	.1 c.c.

The tubes are incubated in the water bath at 37° C. for one-half hour.

Test for Diagnosis—The test for diagnosis is set up as follows:

Number of tube	Patient's serum 20 per cent	Antigen in standard dilution	Complement 10 per cent	Amboceptor determined dilution (2 units)	Cells 10 per cent
1 -----	.2 c.c.	.1 c.c.	.2 c.c.	.2 c.c.	.2 c.c.
2 -----	.4 c.c.	.1 c.c.	.2 c.c.	.2 c.c.	.2 c.c.
3 -----	.4 c.c.	.0 c.c.	.2 c.c.	.2 c.c.	.2 c.c.

The patient's serum, antigen and complement are incubated in the water bath at 37° C. for two hours, after which the amboceptor and cells are added and the tubes reincubated for one-half hour.

A positive control serum is always included in the test. Complete inhibition in tubes 1 and 2 is reported a very strong positive (+++). Partial hemolysis in tube 1 with complete inhibition in tube 2 or slight hemolysis in tubes 1 and 2 is reported positive (++). Partial hemolysis in tube 2 with complete hemolysis in tube 1 or very slight inhibition in tubes 1 and 2 is reported inconclusive (+). Nearly complete hemolysis in tube 1 with almost complete hemolysis in tube 2 is reported inconclusive (±). Complete hemolysis in all tubes is reported negative.

TUBERCULOSIS.

All specimens of sputum are autoclaved before examining. This breaks up the mucus as well as renders the specimens safe to handle.

Thick smears are made on new slides and after fixing by heat are stained in jars at least ten minutes with the acid fast stain by the cold method. The smears are washed in water until all surplus carbol fuchsin is removed and stained with Gabbet's stain (in jars), from thirty seconds to one minute, depending on the thickness of the smear.

The nonacid fast organisms take the stain very lightly so that the tubercle bacilli appear a very dark red against a faint blue background.

Acid fast stain:

Fuchsin basic	4.0 gms.
Phenol crystals	8.0 gms.
Distilled water	150.0 c.c.

Gabbet's stain:

Sulphuric acid 25 per cent	100 c.c.
Methylene blue	1 gm.

The Gabbet's stain should be changed frequently.

TYPHOID FEVER.

Blood culture. About 5 c.c. of the patient's blood are added to 250 c.c. of broth and incubated at 37° C. for twenty-four hours; smears from the blood culture are stained by Gram's method and if no contaminating organisms are found, several loops full are planted on an agar slant. After twenty-four hours incubation, the culture is washed down with sterile saline and is agglutinated with a typhoid agglutinating serum of known titer.

If the blood culture is found to be contaminated it must be planted on Endo medium, suspicious colonies fished and planted into Russell's double sugar medium; if the fermentation reactions are satisfactory for typhoid, the organism is agglutinated with a known serum, as above.

Agglutination Test (Microscopic). Only containers for collecting moist blood specimens are now used by this Bureau, the dried blood method having proven unsatisfactory. The serum is withdrawn from the clot and dilutions of 1/20 to 1/320 made in small test tubes; to each of these dilutions one or two drops of the typhoid antigen is added. These are placed in the 37° C. water bath for over night, then in the ice box for one hour, or they may be incubated two hours in the 37° C. water bath and placed in the ice box over night. A positive reading is based upon a clear supernatant fluid and the rising of typical flakes upon shaking the tubes. Just before adding the killed culture of typhoid bacilli to the different dilutions of serum, enough of the 1/40, 1/80 and 1/160 dilutions are taken out to set up a microscopic agglutination test which is run as a parallel.

The antigen is prepared as follows:

Hopkin's strain of *Bacillus typhosus* is used as our agglutinating strain. Broth cultures of this strain are carried over every twenty-four hours for two days, then several agar slants are inoculated and incubated for forty-eight hours. After proving the strain pure by Gram's stain, about 5 c.c. of formalized salt solution are added to each slant, depending upon the amount of growth. This is allowed to stand about fifteen minutes. Shaking carefully makes a better suspension than scraping off the growth with a platinum wire, since there is no chance of taking off bits of media. This is stored for twenty-four hours in the icebox, then inoculations are made onto agar slants as a test for sterility.

Agglutination Test—Microscopic. If an insufficient amount of whole blood has been sent in to allow a macroscopic agglutination to be done, a microscopic test is made. After centrifuging the specimen the serum is drawn off with a capillary pipette; dilutions are made in watch-glasses with sterile saline using the same capillary pipette throughout the test in order that the size of the drops may not vary.

Dilutions 1:4 are made with B. typhosus, Hopkin's strain, B. paratyphosus A. and B. In addition dilutions of 1:80 and 1:160 are set up with B. typhosus. Cultures are made by setting up hanging drops of the cultures with saline.

A positive diagnosis is made when there is complete clumping with no free organisms, faint clumping with complete loss of motility or only a few irregularly moving organisms.

If there is partial clumping with motility, the reaction is said to be inconclusive and another specimen is requested.

If there is positive agglutination with B. typhosus, B. paratyphosus A. and B. in the 1:40 dilution, higher dilutions are run with the two paratyphoids in order to determine the specific agglutinated organisms.

All other reactions are interpreted as negative.

Care of Cultures. The cultures used are planted each day into broth from an agar slant and are incubated at room temperature. The slants are carried over every week.

The broth and agar cultures of *Bacillus typhosus* and *Bacillus paratyphosus* A. and B. are frequently examined by Gram's stain as a check against contamination. If the cultures are found contaminated they are plated on Endo medium, colonies picked, planted into Russell's double sugar medium and agglutinated with a typhoid or paratyphoid agglutinating serum of known titer.

Excretion. Whenever possible the fresh specimen is used but when specimens are sent to the laboratory by mail a special outfit is required which contains a 20 per cent solution of glycerine in saline. It is requested that the soft stool be obtained, preferably the second after taking a cathartic. Calomel should not be taken.

A small portion, about the size of a bean, of a well mixed and broken specimen is transferred to a tube of nutrient broth; 0.1 c.c. of this mixture is transferred to a second tube and 0.1 c.c. from the second to a third. These dilutions are allowed to stand about ten or fifteen minutes before plating.

One or two drops of the broth mixtures are well spread, using a bent glass rod, over the surface of freshly prepared Endo plates. Use one plate for each broth dilution. After twenty-four hours incubation the clear, transparent, pearly colonies are seeded by streak and stab inoculation into Russell's double sugar agar. In this medium we obtain the acid and gas production while the slant provides growth for the macroscopical agglutination, hanging drop for motility and smear for staining, by Gram's method. The macroscopic agglutination confirms the cultural findings, and the serum used is one of known titer. Should there be any doubt regarding the sugar reaction in the Russell's medium, fermentation tubes of glucose, lactose, saccharose and mannit broth are inoculated as a check.

The formulæ for the media used are given in detail. For Endo's medium a 2 per cent nutrient agar in 50 c.c. and 100 c.c. lots is titrated to +.8 to phenolphthalein and stored ready for immediate use. A sterile 10 per cent solution of lactose and a 10 per cent alcoholic solution of fuchsin are kept on hand. The Endo medium is prepared and plates poured just before using.

To the melted 2 per cent agar add 1 per cent lactose and 3 to 5 drops of fuchsin, decolorize with freshly prepared 10 per cent aqueous solution of sodium sulphite, using about twice the amount of fuchsin. Pour plates, and when cold place open and inverted in the incubator for one-half hour to dry the surface of the medium.

For Russell's medium add to a 2 per cent nutrient agar, adjusted neutral to litmus, 1 per cent lactose and 0.1 per cent glucose and sufficient concentrated litmus solution to give a blue violet color. Tube and slant, leaving a generous "butt" at bottom of tube. This medium should be sterilized in the Arnold sterilizer.

The carbohydrates in 1 per cent amounts are added to nutrient broth, tubed in fermentation tubes and sterilized in the Arnold sterilizer. The Andrade indicator, consisting of 100 c.c. of a 0.5 per cent aqueous solution of acid fuchsin, decolorized by the addition of 16 c.c. normal sodium hydroxide solution, is used with the carbohydrates. 1 c.c. of indicator is added to each 100 c.c. of media, the reaction of which is adjusted to the indicator so that it is distinctly pink when hot, but colorless when cold.

TYPHUS FEVER.

Blood from a suspected case is drawn from a vein and immediately added to a 10 per cent sodium citrate solution in the proportion of 9 to 1 and thoroughly mixed.

At the laboratory guinea pigs are inoculated intraperitoneally with 2 to 5 c.c. of the citrated blood. The temperature of the guinea pigs is taken before inoculation and then twice daily. Laboratory findings depend upon the temperature chart, a positive report being given when the characteristic rise takes place about seven to ten days after inoculation.

REPORT OF THE BUREAU OF TUBERCULOSIS.

E. L. M. TATE-THOMPSON, Director.

The history of legislation dealing with the tuberculosis problem in California, dates back to 1904. During the general awakening to the necessity of hospital care for the tuberculous, the Eastern and Middle Western states made large appropriations that have since been doubled and trebled in amount for state sanatoria. In 1904 a bill was introduced in the legislature, calling for an appropriation of \$150,000 for state sanatoria; this failed to pass.

In 1907 the legislature passed a law requiring the reporting of all cases of tuberculosis, an antispitting law was also passed, \$2,000 was appropriated for the dissemination of knowledge concerning the spread of tuberculosis, and nearly 1,000,000 pieces of literature on the subject were distributed among the school children of the state. The State Board of Health was also empowered to arrange for the treatment of indigent tuberculous residents in public and private sanatoria—the bills for the patient's care to be met by their home counties. Only within the last two years, since the agitation for better care for our indigent tuberculous patients has been made throughout the state, have the supervisors taken advantage of this law. At present many of the counties while in the process of constructing new hospitals have placed their patients in various institutions recommended by the bureau throughout the state.

In 1911, the California Tuberculosis Commission was appointed by the State Board of Health. An appropriation of \$5,000 was made to carry on the investigation.

In 1913, the commission reported to the legislature and presented a constructive program, which included the establishment of a Bureau of Tuberculosis—the legislature making an appropriation of \$7,500. This amount was so small that it was impossible to inspect the hospitals regularly and did not allow sufficient postage to carry on the administrative work of the bureau. The example set by California, however, resulted the following winter in the creation of a Bureau of Tuberculosis in the State Board of Health in New York, Ohio and Wisconsin. The inspection of the county hospitals making provision for indigent tuberculous patients, brought to light two significant facts: First, more deaths from tuberculosis were reported in every county, and second, disclosed the fact that the hospitals were serving as a place where the homeless and often tuberculous tramp, too ill to continue his journey, might be taken to die. Conditions in these hospitals begged description, but the counties justified their lack of proper care by the fact that they were waiting to see what policy the state intended to adopt. Many of the counties, particularly in the northern part of the state, prior to 1915, made no provision whatever for patients suffering from tuberculosis. In the fall of 1914 conferences were held by the California Association for the Study and Prevention of Tuberculosis, with the State Board of Health, and others interested in the problem—the high death rate in the counties, the inadequate number of beds, the lack of proper buildings, of medical attention and nursing care, coupled

with the utter impossibility of caring for the large number of indigent patients, needing hospital care, made an adequate state institution, unless the appropriation ran well into the millions of dollars—an impossibility.

In 1915 four tuberculosis measures were introduced in the legislature. Three bills of a similar nature called for appropriations for state sanatoria. The other enlarged the duties and powers of the Bureau of Tuberculosis, authorizing a subsidy of \$3.00 per week per resident tuberculous indigent, to be paid to counties maintaining tuberculosis hospitals or wards that complied with the standard of the Bureau of Tuberculosis, the Director having the same powers of inspection and supervision as in the previous act of the legislature. The bill carried an appropriation of \$75,000, \$20,000 of which was set aside for administration of the act, and \$55,000 for the subsidy, to be paid the counties complying with the standard of the bureau. After the passage of this act, the bureau was confronted with a task of standardizing separate buildings, pavilions, wards in large general hospitals, and rooms in almshouses. The standard has not only changed the present system, but has also served as a standard for buildings to be constructed in the future. That the standard adopted by the State Board of Health has changed county hospitals enough so that they rank with the first-class private and public sanatoria of the country is no exaggeration. From the days in which there was no medical attention and frequently no nursing excepting what the patients gave each other, these subsidized hospitals have improved until now they are giving first-class care and treatment.

The legislature of 1917 made an appropriation of \$125,000, \$30,000 of which went to the bureau for administration.

STANDARDIZATION FOR TUBERCULOSIS WARDS OR PAVILIONS OF COUNTY HOSPITALS.

In determining the eligibility of hospitals for the state tuberculosis subsidy, they will be graded by the State Board of Health, according to location, construction, treatment and care of patients, and diet.

Location and grounds—will count one to five points.

Construction and type of building—one to twenty-five points.

Treatment and care—one to thirty-five points.

Diet—one to thirty-five points.

A hospital must receive a total of eighty points to be eligible for the state subsidy.

Location.

Any buildings or pavilions to be constructed in the future must be on a part of the grounds separate from the general hospital. Counties contemplating construction must bear this in mind and consult with the Bureau before locating their building. Accessibility, transportation, length of time in reaching the hospital, and its proximity to other county buildings will be the points on which location will be graded.

Buildings.

The Bureau discourages the erection of an expensive type of building unless it is a part of a general plan for a large county or city and county hospital. In the smaller counties, inexpensive buildings have been erected to care for as many as forty patients for about \$14,000.00.

Buildings will be graded on their construction and on the type of building, also their capacity relative to the need of the tuberculosis poor of the county. They will be classified as separate buildings, pavilions, cottages, wards in a general hospital, "shacks" or tent houses.

Class A Structure.

A separate building.—It must have proper accommodations for a head nurse; sufficient baths, toilets and lavatories for patients; a diet kitchen for preparing food which can not be transported; two kitchen sinks or adequate facilities for washing and disinfecting dishes. If the building is separate from the general hospital and run as a sanatorium, it must have an examination room. There must be isolation rooms for advanced cases; not less than one isolation room for every ten patients. In the wards, there must be a minimum distance between beds of 3 feet 6 inches. Wards must be sufficiently lighted, preferably by electricity. Wards need not be heated, but dressing rooms, bath-rooms and patients' dining-room must be heated in cold weather.

Class B Structure.

A ward in the general hospital.—The requirements regarding equipment and sufficient isolation rooms and food will be the same as for Class A. Class B structures must have a separate dining-room for ambulatory patients.

Class C Structure.

The "shack" type or tent house.—It can not be used except for earlier cases. Any erection of a "shack" or tent house will be discouraged unless a nursing force is provided adequate for giving patients the necessary care.

Equipment.

In structures of any of the three classes, the following requirements must be met: In buildings having over thirty-six (36) beds, one tub or shower bath for every twelve (12) patients; one lavatory for every six (6) patients; one toilet for every six (6) patients; two dental lavatories and two slop sinks for every thirty-six (36) patients; two kitchen sinks are desirable. The stove in the kitchen must be large enough so that if food is to be prepared there, it can be done without inconvenience.

There must be back rests for bed cases; ambulatory cases must be provided with inexpensive canvas reclining chairs. If trays are used, they must be kept clean. The more expensive aluminum trays last much longer than the common papier maché, which will not be allowed in the future. The use of granite iron dishes and tin spoons is discouraged.

Call bells must be provided in each ward; properly ventilated lockers must be provided for each patient; scales also must be provided.

Wards and rooms must be screened and wards and sleeping rooms must be canvassed. A platform or sun porch must be provided.

Treatment and Care.

If there is not a resident staff connected with the hospital, a visiting staff must be arranged. This can be done through the County Medical Society. There must be one interne for every fifty patients. Daily records must be kept. There must be a complete examination on admission and frequent subsequent examinations. The diagnosis and type of tuberculosis must be recorded and the complete record of the patient must be kept where it is accessible to the representative of the State Board of Health. Temperature must be taken four times a day and accurate charts must be kept.

Nursing.

In Class A buildings there must be one registered nurse who has had special training in tuberculosis nursing, and one nurse for every sixteen patients; also one orderly. In Class B buildings nursing must be supervised by the superintendent of nurses, and one pupil nurse provided for every sixteen patients.

Admission.

The admission blanks furnished by the State Board of Health must be filled out in full and sworn to by the patient and the superintendent of the hospital.

Care of Patients.

Adult patients must be segregated as far as possible, according to the stage of the disease. Bed cases must be placed in the smaller wards, so that it will be convenient for dying cases to be taken into the isolation rooms. Children must be segregated in a small ward of their own. Bedding must be disinfected after death or removal of each patient. Patients needing extra heat at night must be given hot water bottles or soapstones.

Property of Patients.

Provision must be made for the safe storage of any valuables or money deposited by the patient.

Food.

Care must be taken in handling and serving food for patients so it will be attractive. There is an enormous waste of food in hospitals, due to the fact that patients frequently can not eat the food served them. It must be remembered that patients suffering with tuberculosis nearly always have serious stomach disturbances and fickle appetites, and the serving of food to these patients must be done with this in mind. If the food is to be transported from the general hospital, it must be sent over in a fireless cooker or reheated before being served.

Tea must be made in the diet kitchen, and coffee, if sent from the general hospital, must be hot, when served. We recommend that coffee and toast and eggs be prepared in the diet kitchen.

A suggested diet list will be submitted by the State Board of Health.

LIST OF SUBSIDIZED HOSPITALS.**The San Joaquin County Tuberculosis Hospital.**

This was the first hospital subsidized. Many changes were made to comply with the standard; new kitchens were built, extra nurses added; in fact, so excellent has this hospital been since the beginning of its being placed on the eligible list that the San Joaquin supervisors have been generous enough to allow us the privilege of placing soldiers, who are being cared for by the government, in this hospital. Many patients from outside counties are also cared for here.

Fresno County Tuberculosis Hospital.

This hospital has undergone a number of changes since it was constructed. This past summer they have remodeled the building, and a kitchen has been built that will obviate the serving of food from the kitchen of the general hospital.

Sacramento County Tuberculosis Hospital.

No provision is made in the county for the care of women or children suffering with tuberculosis—this group of patients being cared for by special arrangement with an outside hospital. Changes were made in the present building to comply with the standard, and men needing care were sent to the Sacramento Hospital. No additional beds were recommended to the supervisors, because of the urgent necessity of building in the country. Sacramento, with Yolo, Placer, Yuba, Amador, El Dorado, Contra Costa, Tuolumne, Plumas, Colusa and Sutter counties have already purchased 480 acres of land near Colfax and a large Tuberculosis Sanitarium is in process of construction. When this is finished these counties will be in position to give first-class care and treatment to any patients, both pay and indigent, who may be suffering in their immediate counties.

Santa Clara County Tuberculosis Hospital.

This county maintains an excellent tuberculosis hospital, having been subsidized for the past year and a half. The bed capacity has been doubled by means of a new wing that provides private rooms, splendid new baths and dressing rooms and a fine kitchen.

San Diego County Tuberculosis Hospital.

The San Diego County Hospital has been crowded to the limit of its capacity for many years. Application was made for the subsidy in 1916, but it was impossible to grant it. In 1917 an appropriation was made for a splendid new hospital some distance from the present county hospital, with a capacity of over 60 patients, with ideal surroundings, and as we go to press a bequest of \$35,000 given to the county by the courts makes it possible to extend the new wing of the hospital so that San Diego will soon be in a condition to take a group of people who are able to pay a dollar a day. This hospital will be subsidized as soon as it is opened.

San Bernardino County Tuberculosis Hospital.

Many visits have been made to the old tuberculosis hospital, and the director is glad to report that the new tuberculosis building recently erected by the supervisors ranks with any of the new hospitals that have been completed. It has excellent accommodations for both men and women and has been operating under the subsidy ever since it was opened.

Los Angeles County Tuberculosis Hospital.

The Board of Health has never been able to subsidize the full capacity of this hospital, principally for the reason that its overcrowded condition and long

waiting list is proof that the county is not giving adequate care. A temporary building was constructed for men and 23 more beds were subsidized in the women's ward. Since this time Los Angeles has purchased 450 acres of land in the San Fernando Valley and there is in process of construction now a magnificent sanitarium that, when its full capacity is reached, will care for 500 patients, at a cost of a half million dollars. This institution will be only for curable cases—the far-advanced cases will be cared for in the city of Los Angeles. Hundreds of soldiers who will need care will be able to go here for a short period and be restored to health.

Alameda County Tuberculosis Hospital.

Inspections were frequently made of the tuberculosis building at the county infirmary; granting the subsidy was not possible, and in the spring of 1917 the supervisors purchased a beautiful tract of land in Livermore Valley and have erected one of the finest tuberculosis sanitariums in the United States. It will soon have a capacity of 200 patients. Splendid provision is made for every group of patients in the county. This sanitarium has been subsidized ever since it was opened.

Marin County Tuberculosis Hospital.

Excellent provision has been made in Marin County in a small 12-bed building. This is run in connection with the county hospital. It has met ever since it was opened the requirements of the Bureau of Tuberculosis for the subsidy, but the supervisors have refused to have the hospital placed on the eligible list.

San Francisco City and County Tuberculosis Hospital.

Considerable remodelling of the old buildings has taken place from time to time. The hospital has been suspended twice on account of the waiting list, and while the buildings have a capacity of 275 beds, only 100 beds have been subsidized; but patients have had, in spite of the old buildings, good care. In the spring of 1918, after a conference with the superintendent of the San Francisco hospital, the mayor and the chairman of the Finance Committee, an appropriation of \$50,000 was made for a sanitarium in the country. The new half million dollar hospital will soon be opened, but it does not give any guarantee that San Francisco, with its many rejected draft men and discharged tubercular soldiers, will be in a position to care for the enormous group of patients in San Francisco that are in need of immediate care.

Shasta County Tuberculosis Hospital.

Shasta County has excellent accommodations now for 16 patients. Previously there was no place in California where miners suffering from miner's tuberculosis could be sent. The building of this pavilion has filled a long-felt want in the north and has been subsidized since the opening.

Kern County Tuberculosis Hospital.

In January a joint meeting was held with the supervisors of Kings, Tulare and Kern counties to discuss the advisability of establishing a joint county hospital. A great deal of time was spent the following months in the selection of a site. Owing to the distance, it seemed advisable for Kern County to build alone. There will soon be accommodations for 60 patients. A beautiful location was selected on top of the Tehachapi and the sanitarium, consisting of a series of six attractive buildings, will soon be open.

Kings and Tulare County Tuberculosis Hospital.

Following the decision of Kern County to build alone, a site near Springville was selected and this building, with accommodations in the beginning for 42 patients, will soon have accommodations for 60.

Santa Barbara County Tuberculosis Hospital.

Santa Barbara County had planned in the beginning to join with Ventura and Los Angeles. After spending considerable time debating the advisability of their joining, they decided to build alone, \$82,000 has been appropriated for a new sanitarium to be run in connection with their new general hospital.

Merced, Stanislaus and Madera Counties.

Numerous meetings have been held with the joint boards and many sites visited in the Sierras. A splendid site has been selected in the high Sierras, so the patients will be able to get away from the enervating heat of the valley in the summer. The hospital will have a capacity of 100 beds.

Humboldt, Mendocino, Sonoma, Napa and Lake Counties.

A similar campaign was inaugurated among this group of counties in the early summer. Many sites have been investigated and it is only a question of a short time before they definitely decide on some land in Sonoma County. When this plan is completed all of the counties will be in a position to give first-class care to any of their civilian tuberculosis patients in buildings that are constructed separate from any of the other county institutions. The bureau is given the privilege by the War Risk Insurance Bureau of referring patients to these institutions. This will also solve the problem of caring for many rejected registrants as well as discharged tuberculous soldiers.

Counties to Be Worked in During the Coming Year.

Several attempts have been made to have Riverside County provide adequate care for its patients—the original plan was for them to join with San Bernardino. At the last moment they decided not to join, and instead have made some attempt to remodel their old building at the county hospital. Orange County is being approached at this time to also remodel their building, which has never been successful in its arrangement.

Imperial County is also being visited.

Ventura County has planned to join with Los Angeles, and when San Luis Obispo, San Benito and Monterey counties are ready to care for their patients adequate provision will have been made by every county in the state.

The amount appropriated to date for sanatoria in California is as follows: San Francisco County—\$500,000 for hospital in city, 250 beds; \$50,000 for sanitarium outside city, (?) beds; \$7,500 for remodeling old building.

Los Angeles County—\$150,000 with a definite promise of a 1-cent tax levy; \$240,000 for the next three years to complete the sanitarium at Sylmar, 500 beds when completed; \$2,500 appropriated for temporary buildings; 250 beds available in the Los Angeles County Hospital for advanced patients—750 beds.

San Diego County—\$40,000 for 60 beds, with an additional appropriation of \$35,000 available to date; 40 beds more when completed.

San Bernardino County—\$20,000—40 beds.

Santa Barbara County—\$32,000—42 beds—12 beds available in portable houses.

Sacramento, Placer, El Dorado, Sutter, Plumas, Yuba, Yolo, Tuolumne, Amador, Colusa and Contra Costa counties—\$180,000—300 beds.

Shasta County—\$3,600—16 beds.

Fresno County—\$18,000—50 beds.

San Joaquin County—\$18,000—46 beds.

Santa Clara County—Remodeling, \$10,000—60 beds.

Marin County—\$3,600—12 beds.

Kings and Tulare counties—\$20,000—42 beds.

Kern County—\$15,000—60 beds.

Ventura County—\$11,000—16 beds.

Merced, Madera and Stanislaus counties—\$50,000—100 beds.

*Humboldt, Mendocino, Sonoma, Lake and Napa counties—\$40,000—80 beds.

Alameda County—\$200,000—200 beds.

Total beds—2,182.

Total amount appropriated for buildings and equipment, \$1,646,200.

This amount is for buildings and equipment only—not for maintenance.

Besides this we have in the four semiphilanthropic institutions, viz: The Barlow Sanitarium at Los Angeles, La Vina at Pasadena, Arequipa in Marin County and Duarte, Los Angeles County, 231 beds available for early cases of tuberculosis where patients may pay a small sum for their care.

Resthaven Camp for Discharged Tuberculous Soldiers.

On account of the large number of men rejected in the draft and discharged from the army on account of tuberculosis, because all of the hospitals are crowded, the San Diego Tuberculosis Association, assisted by the California Tuberculosis Association, opened a small camp for men who were not hospital cases, but who need rest and care. This camp is supported by the Red Cross chapters and tuberculosis societies, paying \$1.00 a day for the care of each man entered there. Patients are admitted through the bureau.

Rejected and Discharged Soldiers.

When the men in the first draft were called, the bureau, realizing what a golden opportunity presented itself to reach hundreds of early cases, at the time of the draft examinations prepared a set of cards.

A

CALIFORNIA STATE BOARD OF HEALTH BUREAU OF TUBERCULOSIS SACRAMENTO, CALIFORNIA

Report of a Case of Suspected or Known Tuberculosis

Name of person examined

Street and number

City or town

Type of disease { suspected { tuberculosis of lungs, larynx, lymph glands,
 known { peritoneum, bones, intestines, meninges, skin.....

Stage of disease: Early, moderate, advanced. (Cross out words which do not apply.)

Place of examination

Date of examination

Examining Surgeon

I request a thorough examination by a tuberculosis expert and advice about the need for treatment and opportunities for receiving it.

Person examined

The signer of the request will be notified when and where to report for examination.

*Site has not yet been located, money available for it.

THE STATE LAW REQUIRES YOU TO REPORT ALL CASES OF TUBERCULOSIS

C

CALIFORNIA STATE BOARD OF HEALTH
BUREAU OF TUBERCULOSIS
 Sacramento, California

Mr.----- of -----

rejected at the time of the selective draft by the military or naval authorities on account of tuberculosis, has been instructed to report to Dr.-----

Tuberculosis Examiner, at the following time:-----

This record card should be filled out by the tuberculosis examiner in every case and returned in the enclosed stamped envelope. If the case proves to be one of tuberculosis the enclosed official tuberculosis report card should be filled out and returned with this record. If the patient does not appear within fourteen days after the date given above, that fact should be recorded and the card returned.

The patient reported on -----1918.

Important items in patient's family and personal history: -----

Symptoms complained of: -----

(See other side for physical examination)

~~Reverse of tuberculosis card~~

NAME OF PATIENT-----

Temperature ----- at ----- Weight -----

Examination of chest-----

Tubercle bacilli in sputum?-----

Examination of other parts showing evidence of tuberculosis-----

Diagnosis (including location, stage, activity, and severity of lesions)-----

Needs of the patient-----

Advice given patient-----

Referred to what person, health department, or institution, for treatment, supervision, or assistance -----

Recommendations to State Board of Health-----

Remarks -----

-----1918.-----

Tuberculosis Examiner

Arrangements were also made with tuberculosis specialists in various parts of the state to re-examine the men free of charge. The visiting nurses and the county nurses and Red Cross chapters have all co-operated, and hundreds of men have been placed under observation, their families being instructed as to how to care for themselves. So much has been done, in fact, that many men rejected in the first draft were accepted in the second because they responded immediately to the care given them.

BUREAU OF TUBERCULOSIS.

Report on Men Rejected in Navy, in First and Second Drafts.

September 1, 1918.

Number of rejected men reporting for second examination to staff of physicians appointed by State Board of Health.....	530
Number independent having home treatment or private physician.....	519
Number of cases attending clinics.....	211
Number of cases visited by our field nurses.....	449
Number of cases referred to Red Cross chapters.....	22
Number found nontuberculous after second examination.....	95
Number accepted for service.....	29
Number needing sanatorium care.....	109
Number placed in sanatoria.....	78
Number living in rural districts too far to visit.....	18
Number left the state.....	51
Number of deaths.....	13
Number unable to locate on account of incorrect address or moved.....	178

Totals.

Total number of cases data not completed.....	591
Total number of cases in closed files.....	1,344
Total number of rejected men.....	1,935

Report on Men Discharged from California Camps on Account of Tuberculosis.

September 1, 1918.

Number independent having home treatment or private physicians.....	396
Number of cases attending clinics.....	282
Number of cases visited by our field nurses.....	599
Number of nontuberculous cases.....	29
Number of cases reported accepted for service.....	31
Number needing sanatorium care.....	158
Number placed in sanatoria.....	108
Number referred to Red Cross chapters.....	60
Number left the state.....	27
Number living in rural districts too far to visit.....	3
Number of deaths.....	8
Number unable to locate on account of incorrect address or moved.....	273

Totals.

Total number of cases not completed.....	267
Total number of cases in closed files.....	1,241
Total number of men leaving camp without giving address.....	98
Total number of soldiers excluded from service (who reside in California).....	1,606
Total number of soldiers discharged from California camps, whose legal residence is in other states.....	1,136
Personal letters from the rejected and discharged men received at the bureau.....	1,000
Letters received from Red Cross chapters regarding the men.....	300

REPORT ON MEN REJECTED IN 1ST AND 2D DRAFTS AND IN NAVY.
September 1, 1918.

County	Reported for second examination	Independent, home treatment or private physician	Child cases	Visited by field nurses	Accepted for service	Nontuberculous	Left state	Died	No. needing sanatorium care	No. placed in hospitals or sanatoria	No. referred to Red Cross chapters	Can not locate—incorrect address or moved	Living in rural district too far to visit	Total No. cases, data not completed	Total No. in closed files	Total No. of rejected men
Alameda	40	29	30	28	3	14	1	1	14	10		3		46	74	120
Alpine																
Amador	5	5												6	10	16
Butte	2	2												2	2	2
Calaveras	3	2					1		1	1		2		3	5	3
Colusa	2	2									3			1	2	3
Contra Costa	2	2	2						1	1		1		13	7	20
Del Norte							1					1		1	1	2
El Dorado	2	1	*2											7	3	10
Fresno	58	33	28	27	4	9	2		10	6		8		44	110	154
Glenn																
Humboldt														1		1
Imperial	3	2										2		3	10	13
Inyo														2	2	2
Kern	3	1		1		1						1		12	4	16
Kings	1	1									2	1		8	5	13
Lake														2		2
Lassen														1		1
Los Angeles	130	216	64	225	7	34	25	3	45	35		67		143	498	631
Madera	1	1							1			1		3	2	5
Marin	3	2		4					1					5	5	5
Mariposa														1		1
Mendocino																
Merced	9	7				1	1		2			4		21	27	48
Modoc														6	6	6
Mono														3	1	4
Monterey	3	1	3				1	1						5	4	9
Napa	2	2												4	5	9
Nevada														4	2	6
Orange	22	36		31	2		2	1	4	4		4	4	5	42	47
Placer	6	3		1			1		2	2		1		13	3	21
Plumas		2					1					2		4	4	8

Riverside	24	12	2	1	3	2	2	3	2	2	2	2	41	43
Sacramento	7	13	2	24	2	1	2	1	6	6	2	2	24	26
San Benito	4	3	4	4			2		1	1	1	1	7	8
San Bernardino	17	23	17		1	1	3	5	2	5	26	51	76	
San Diego	10	4	10	6				2	2	15	53	89	92	
San Francisco	38	25	4	29	1	8	1	3	3	18	33	88	116	
San Joaquin	72	29		59	3	19	2	1	4	1	25	125	150	
San Luis Obispo	2	2					2				4	2	6	
San Mateo	10	7	2	2		3	2			3	19	21	40	
Santa Barbara	1	1		1			1			1	1	1	3	4
Santa Clara	8	10	6	14		1	1	3	2	1	4	14	18	
Santa Cruz			12					1	1	1	3	3	3	
Shasta	6	6							1	1	7	5	12	
Sierra											2		2	
Siskiyou											12		12	
Solano	2	2					2				4	4	8	
Sonoma	4	4							2		5	6	11	
Stanislaus	3	1			1						3	4	7	
Sutter	1	1									3	1	4	
Tehama								1			1	1	1	
Trinity	1	1									2	1	3	
Tulare	41	30			3	1	1			14	7	70	77	
Tuolumne	1	1									5	1	6	
Vintura	1	1							6		5	1	6	
Yolo	2	1	4	4		1		1			4	4	4	
Yuba	4	6	6						4		4	12	16	
Totals	580	519	211	449	29	95	51	109	78	22	178	18	1,844	1,885

REPORT ON MEN DISCHARGED FROM CALIFORNIA CAMPS ON ACCOUNT OF TUBERCULOSIS.
September 1, 1918.

County	In treatment, having home treatment or private physician.	Chronic cases.	Visited by nurses.	Accepted for service.	Nontuberculous.	Left state.	No. needing sanatorium care.	No. placed in sanatoria.	No. referred to Red Cross.	Incorrect address or record can not locate.	Died.	Living in rural district too far for visit.	Total No. follow-up work not completed.	Files closed.	Total No. of discharged men.
Alameda	29	69	59	1			20	15		16			10	101	111
Alpine															
Amador	1									1			1	2	3
Butte	1	*1							6	3			9	17	26
Calaveras	1							1		10			2	11	13
Colusa	2						1	1	2				4	4	4
Contra Costa	8	*1		1					4	5		1	12	19	31
Del Norte										1					1
El Dorado	1											1		2	4
Fresno	21	34	26			1	10	6		15			11	53	61
Glen	2												2		2
Humboldt	1		6			1			1	4			7	8	15
Imperial	1								1	4			9	18	21
Inyo	1									1			2		2
Kern	14	3	8				4	3	1	4			10	22	32
Kings	2								2	2			3	6	9
Lake															
Lassen	1														
Los Angeles	51	86	275	14	13	19	65	48	5	49	4		46	389	435
Madera	4					1	1	1	1	4			8	7	10
Marin	4	*2	5		1		1	1						7	7
Mariposa															
Mendocino	6			1						5			9	12	21
Merrill	4									2			1	6	7
Modoc									3					3	3
Monterey	2		5				8	2					5	12	17
Napa	4		1	1	1					2		1	2	7	9
Nevada									2	3				2	2
Orange	7												11	8	19
Pacifica	3	1	3						1	2			3	5	8
Plumas			1										2	1	1

BUREAU OF TUBERCULOSIS.

[illegible]

Field Work.

The bureau has been fortunate in having three intensive surveys made in Orange, Alameda and Sonoma counties during the year. Much good has been done not only in an educational way from these surveys, but many conditions that were contributing causes to tuberculosis have been eliminated. The careful work of the field worker has been invaluable.

Temporary appointments have been made from time to time since the draft in order to follow up the names of all men whom we thought needed care. The bureau had a field worker stationed at Camp Kearny for two months. A permanent investigator has also been stationed in Los Angeles to help with the work there. A dietitian has been placed temporarily, sometimes a week at a time, in some of the hospitals in order to assist them in the preparation of a balanced diet for patients and also to teach them conservation in the serving of food.

Special Investigations.

For six months the bureau made a survey in Los Angeles and San Francisco of conditions among the operatives who are employed in moving picture theaters. Conditions under which these men work in many instances disclosed the fact that not only was there a minimum of light and air for these men who work in excessive heat during all performances, but that there were no exits, and that while fire protection had been given to the audience, no arrangements whatever had been made for the operator. No toilet arrangements had been provided in most of the theaters and it would seem necessary not only from the standpoint of prevention of tuberculosis but along the lines of general sanitation that the condition in the booths be remedied. A superficial survey was also made of the elevator operatives and the rag pickers in San Francisco.

Indian Work.

In co-operation with the California Tuberculosis Association, the director has supervised the work in Fresno, Madera, Merced and Tulare counties. So much co-operation has been secured that in the spring the San Joaquin Valley Federation of Women's Clubs offered to build a hospital for Indians suffering from tuberculosis. The Commissioner of Indian Affairs offered to co-operate to the extent of furnishing a special nurse for six months. The California Tuberculosis Association and University of California Dental School have furnished a nurse and dentist.

California Tuberculosis Association.

The close co-operation between the association and the bureau has made a great deal of work possible that otherwise could not have been attempted. With the exception of Fresno, San Diego and Los Angeles, every tuberculosis city and county nurse is paid out of the proceeds of the Red Cross seal sale. Every bit of tuberculosis work locally is done through the various agencies of the state association. The last seal sale, reaching considerably over \$60,000, has made possible a great deal of work that could not have been done otherwise.

The State of California's Next Step.

With the return of hundreds of soldiers with tuberculosis, many of whom will migrate to California, the state must be assured that there will be some reimbursement such as was planned for in the Kent bill, introduced in Congress last year, reimbursing hospitals to care for nonresidents. A State Preventorium for children who are border-line cases of tuberculosis must be established so that these children need not be classed with adults suffering with tuberculosis and who also should not be deprived of an opportunity to attend school.

After the war there will be necessity for a convalescent camp not only for soldiers but for patients who have practically completed their cure in the various county sanatoria; they should then be transferred to such a camp, given special training for the kind of work that they can do best, so that the money that has been spent on them will be an investment. All of the larger institutions that are in process of construction plan also to provide inexpensive cottages that families may rent and yet be under supervision in the institution; this is a necessity and the supervisors have not only co-operated with the director in every possible way but in many instances have far exceeded our demands.

Educational Literature.

Thousands of pieces of educational literature have been distributed at the request of patients. "What You Should Know About Tuberculosis," "Tuberculosis Primer" (which has been translated into French and is being used as much in France as it is in California), "Sleeping Out of Doors," "Tuberculosis Don'ts" in all languages, "Spitting signs" in all languages, and special literature on insurance and compensation has been sent to all discharged soldiers.

REPORT OF THE BUREAU OF REGISTRATION OF NURSES, JULY 1, 1916, TO JUNE 30, 1918.

ANNA C. JAMMÉ, Director.

Historical Sketch.

The department for the examination and registration of nurses was established October 14, 1913, by virtue of a law approved June 12, 1913. In accordance with the organization of the State Board of Health this department became a bureau. The act provided that a director should be appointed by the board. The work of the bureau commenced on October 14, 1913, when the director took office. From January 1, 1914, to July 1, 1914, 4,831 nurses were registered without examination as provided by the act which required that "nurses graduated from a reputable training school connected with a general hospital may be registered without examination prior to July 1, 1914."

After July 1, 1914, applicants for registration were obliged to show satisfactory evidence of having graduated from an accredited school of nursing and to pass an examination conducted by the board. Requirements for accredited schools of nursing were formulated and approved by the board at their regular meeting in February, 1914. These requirements were sent at once to all training schools for nurses in the state and inspection of these schools was begun August 1, 1914.

There were found to be 81 schools of nursing; of these 69 were placed on the accredited list by action of the board during the first two years of the work. The number of students in training during this period was 2,465.

Five examinations were held from December 1, 1914, to July 1, 1916, aggregating 556 applicants.

Examinations.

The law requires that examination of graduate nurses for the certificate as registered nurse shall be held at least every six months. These examinations are held in Sacramento, San Francisco and Los Angeles. During the last biennial period eight examinations were held—three in 1916, three in 1917, and two in 1918. At the urgent request of the American Red Cross Nursing Service a special examination was held in August, 1917, in order to enable unregistered nurses to become eligible for enrollment in compliance with the requirements of the American Red Cross that all enrolled nurses shall be registered. Later in the year, on action of the board, it was decided to hold examinations three times each year, in February, June and October, to accommodate the increased number of applicants. The following table shows the dates of examination, the number entered, passed and failed:

Dates	Number entered	Passed	Failed	Percentage of successful applicants
October 18-19, 1916.....	150	121	29	81.13
April 18-19, 1917.....	212	174	38	82.09
August 22-23, 1917.....	157	142	15	90.45
October 17-18, 1917.....	236	185	51	78.39
February 20-21, 1918.....	212	194	18	91.51
June 19-20, 1918.....	256	216	39	87.7
Totals	1,222	1,082	180	

The examinations are written and occupy two days. The subjects of examination are arranged as follows for each day:

First Day.

A.M.

1. Anatomy and Physiology.
2. Hygiene and Bacteriology.
3. Communicable Diseases.

P.M.

1. Materia Medica.
2. Dietetics.
3. Nursing in Medical Diseases.

Second Day.

A.M.

1. Pediatrics.
2. Urinalysis.
3. Ethics of Nursing.

P.M.

1. Nursing in Surgical Diseases.
2. Obstetrical Nursing.

Registration.

From July, 1916, to July, 1918, 1,091 received certificates as Registered Nurse. Of these, 1,032 were issued on examination and 59 issued without examination, in accordance with section 8 of the law.

Table Showing Registration During This Period.

Years	On examination	Without examination (reciprocity)	Total
July 1, 1916, to July 1, 1917.....	286	25	320
July 1, 1917, to July 1, 1918.....	737	34	771
Totals	1,032	59	1,091

Inspection of Schools of Nursing.

In accordance with section one of the act, formal inspection of all accredited schools of nursing is made at least once each year. More frequent inspections are made when necessary. During the biennial period two inspections were made of each of the 72 accredited schools, and 54 additional inspections made, making a total of 198 inspections.

Inspection has been somewhat more extensive than in the previous biennial period and has included attendance at classes or lectures, witnessing technique in the operating room, methods of work in wards, and closer inspection of the Nurses Homes. In connection with each inspection the high school in the vicinity of the school of nursing has been visited. Co-operation between the high school and the schools of

nursing has been arranged in practically every school for nurses and certain of the theoretical subjects, as chemistry, physiology, nutrition and cookery, are given in the high schools either preparatory to entrance to the school of nursing or taken while the student is pursuing her professional course in the hospital. The inspector has attended these classes and given assembly talks to the girls on nursing in a large number of the high schools visited. It has been very gratifying to note the increasing interest of the work in high schools and the desire of the principals to encourage their students to take the preparatory scientific courses.

Accredited Schools of Nursing.

On July 1, 1916, there were 69 accredited schools of nursing in the state. Later, two were discontinued. On July 1, 1918, there were 72 on the accredited list, five being added during 1917-1918. Two schools were dropped from the list for one year and were later reinstated when it was found that they were meeting requirements. Following is a list of accredited schools July 1, 1918:

Schools of Nursing on Accredited List.

Hospitals with which school is connected	Location
1. Agnew Hospital	San Diego
2. Alameda Sanitarium	Alameda
3. Alta Bates Sanitarium	Berkeley
4. Angelus Hospital	Los Angeles
5. Buena Vista Sanitarium	San Francisco
6. Burnett Sanitarium	Fresno
7. Children's Hospital	Los Angeles
8. Children's Hospital	San Francisco
9. Clara Barton Hospital	Los Angeles
10. County Hospital of Alameda	San Leandro
11. County Hospital of Los Angeles	Los Angeles
12. County Hospital of Orange	Orange
13. County General Hospital of San Diego	San Diego
14. County Hospital of San Joaquin	French Camp
15. County Hospital of Santa Clara	San Jose
16. County Hospital of Sacramento	Sacramento
17. Dameron Hospital	Stockton
18. East Bay Sanitarium	Oakland
19. Emergency and General Hospital	Los Angeles
20. Enloe Hospital	Chico
21. Fabiola Hospital	Oakland
22. Fairmont Hospital	San Francisco
23. French Hospital	San Francisco
24. German Hospital	San Francisco
25. Glendale Sanitarium	Glendale
26. Hahnemann Hospital	San Francisco
27. Hanford Sanitarium	Hanford
28. Hazel Hawkins Memorial Hospital	Hollister
29. Lane Hospital	San Francisco
30. Loma Linda Sanitarium	Loma Linda
31. Mary's Help Hospital	San Francisco
32. Mary Jesse Hospital	Santa Rosa
33. Mater Misericordiae Hospital	Sacramento
34. Mercy Hospital	Bakersfield
35. Mt. Zion Hospital	San Francisco
36. O'Connor Sanitarium	San Jose
37. Pacific Hospital	Los Angeles
38. Paradise Valley Sanitarium	National City
39. Pasadena Hospital	Pasadena
40. Peninsula Hospital	Palo Alto
41. Pomona Valley Hospital	Pomona
42. Providence Hospital	Oakland
43. Ramona Hospital	San Bernardino
44. Redlands Hospital	Redlands
45. Riverside Hospital	Riverside
46. Roosevelt Hospital	Berkeley
47. San Antonio Hospital	Upland
48. San Bernardino General Hospital	San Bernardino
49. San Francisco Hospital	San Francisco
50. San Luis Sanitarium	San Luis Obispo

51. Santa Ana Hospital.....	Santa Ana
52. Santa Barbara Cottage Hospital.....	Santa Barbara
53. Samuel Merritt Hospital.....	Oakland
54. Sequoia Hospital.....	Eureka
55. Sierra Hospital.....	Sonoma
56. St. Catherine's Hospital.....	Santa Monica
57. St. Francis Hospital.....	Santa Barbara
58. St. Francis Hospital.....	San Francisco
59. St. Helena Sanitarium.....	Sanitarium
60. St. Joseph's Hospital.....	Stockton
61. St. Joseph's Hospital.....	San Diego
62. St. Luke's Hospital.....	San Francisco
63. St. Mary's Hospital.....	San Francisco
64. St. Vincent's Hospital.....	Los Angeles
65. The California Hospital.....	Los Angeles
66. The Columbia Hospital.....	San Jose
67. The Evans Hospital.....	Modesto
68. The Hospital of the Good Samaritan.....	Los Angeles
69. The Methodist Hospital of Southern California.....	Los Angeles
70. The White Hospital.....	Sacramento
71. Union Labor Hospital.....	Eureka
72. University of California Hospital.....	San Francisco

Requirements for Accredited Schools of Nursing.

I. *The hospital.*

The hospital with which the school is connected shall have a capacity of not less than fifty beds and a daily average of twenty-five patients.

It shall provide for teaching and experience in surgical and medical nursing and in children's diseases. Each student must have the care of not less than twelve maternity cases, including labor and delivery, and the care of the infant.

It shall provide proper and adequate facilities for class instruction, such as a working library in which is included the more modern text and reference books, a skeleton, a manikin or charts and such additional auxiliary apparatus as the hospital may be able to afford. The classroom must be well lighted and provided with student's tablet chairs and a good sized blackboard. There must be a demonstration room and demonstration equipment as outlined in the pamphlet "Elementary Nursing Procedures." It shall provide a diet kitchen and the necessary equipment for teaching purposes.

It shall provide the necessary laboratory equipment for the teaching of chemistry, bacteriology and analysis of urine.

II. *Nurses home.*

Proper living conditions must be provided for the students. These must include a building erected for the purpose, or, where this is not possible, one suitable and adequate. Dormitories in upper story or basement of hospital will not be considered.

There must be individual sleeping rooms, or where rooms are sufficiently large, two may occupy the same room; sleeping porches are strongly recommended in addition to the regular sleeping rooms; sufficient furniture and one closet for each student.

One bath and one toilet for every ten students.

A reception room, a library, and, when possible, a good sized recreation room.

The nurses' home should be attractively but not expensively furnished. The service should be sufficient to maintain it in an orderly manner and provision should be made for the social life of the school.

III. *Dining-room.*

This room should be clean, well lighted and suitably furnished. The service should be prompt and efficient during the meals. There should be at least one waiter, or waitress, to every twenty students. The diet should be adapted to students engaged in arduous and exacting studies.

IV. *Faculty.*

A sufficient force of instructors must be maintained who are competent to conduct the instruction herein specified and shall consist of:

1. Superintendent of the training school who is a registered nurse and who must possess qualifications requisite for the administration of the school. She must have ability for teaching, capability for guiding the students in moral discipline and be able to maintain a high standard of educational and moral efficiency in the school.
2. A graduate night superintendent who is capable of assuming responsibility and of teaching the students under her supervision.
3. A full-time nurse instructor in a school of over twenty-five students.
4. A graduate surgical nurse who has charge of the operating room.
5. A staff of medical and other lecturers.
6. A dietitian who may or may not be a graduate nurse.

V. *Records.*

There must be a good system of keeping records, showing in detail qualifications for admission, physical condition and character, instruction, attendance at lectures, classes, demonstrations, practice and efficiency in class and bedside work. This complete record of each student must be kept from time of admission to graduation. Immediately on the completion of the course, a copy of this record must be made on the form provided and forwarded to the State Board of Health at Sacramento.

VI. *Affiliations.*

Hospitals unable to meet the requirements of capacity and daily average number of patients or the requirements of experience in any one major subject; namely, medical nursing, surgical nursing, obstetrical nursing and the nursing of sick children, will affiliate with an accredited hospital giving the required experience.

Admission of Students to Schools of Nursing.

Applicants to schools of nursing will be admitted on the following basis:

1. On presentation of satisfactory evidence of the fitness for the study of nursing as follows:
 - (a) *Character.* Testimonials of good moral character from a responsible person indicating that the applicant has obtained sufficient moral poise to conduct herself fittingly and properly during the term of training.
 - (b) *Certificate of sound physical condition and mental ability* from a physician in good standing.
 - (c) *Evidence of satisfactory scholarship.* Applicants may be admitted on a basis of instruction in English during the first two years of high school. It is, however, recommended that the subject be taken for three, or preferably four, years.

2. Applicants presenting a certificate from an approved secondary school showing they have completed with credit the subjects required in the theoretical preparatory course shall be admitted to full standing in the school of nursing with six months credit.
3. Applicants presenting a certificate from an approved secondary school but who are deficient in any of the required subjects may be admitted to provisional standing until such deficiencies are removed. On presentation of credits for this work they will be admitted to full standing in the school of nursing.
4. Applicants who do not present a certificate from an approved secondary school but who present satisfactory credits in the required subjects may be admitted to full standing in the school of nursing without credit.
5. Applicants who do not present a certificate from an approved secondary school and who have had no instruction in the required subjects but who show exceptional intellectual and physical ability will take an examination before commencing the course of instruction in the following subjects:
 - (a) English, including composition, spelling, punctuation.
 - (b) Arithmetic, including fractions and decimals.
 - (c) History, American history and a choice of either civics, science or language, which have been pursued for one year.

If the examination is satisfactory applicants will be admitted to provisional standing for one year on the following conditions: that students shall be entered in the high school in the locality of the school of nursing for the full year's course in the required subjects. On evidence of the satisfactory completion of these courses such students will be admitted to full standing.

6. Graduates of colleges or universities recognized by the Association of American Colleges may be admitted to advanced standing with one year credit. Candidates for this advanced standing must fulfill the requirements for the theoretical preparatory during the course or show by examination that such requirements have been fulfilled.
7. Applicants who present credentials from accredited schools of nursing signed by the proper officials and giving full information concerning the courses pursued, the number of hours of instruction in each subject and their grading on each subject, also evidence showing the nature and amount of practical experience in the services of the hospital and their efficiency record in each service, also evidence that they have complied with the general ruling as to character and physical condition will be admitted to advanced standing as will be equitable in accordance with the evidence submitted.

Credentials.

Credentials and examination grades must be forwarded to the Bureau of Registration of Nurses, Sacramento, before an applicant is formally admitted as a student to any accredited school of nursing. A card of admission will then be forwarded to the applicant which will indicate advanced, full, or provisional standing. When those admitted to provisional standing have complied with requirements for full standing, a card indicating this will be forwarded to the

applicant and a copy kept on file in the office of the bureau. This will indicate her eligibility for examination for certificate as registered nurse on the completion of the course, provided she has met in full the requirements of the State Board of Health.

Combined Courses in Universities and Colleges.

Courses leading to the degree of Bachelor of Arts or Bachelor of Science and Graduate Nurse have been established with the approval of the board in the universities of Stanford and California and in Mills College. The arrangements of these courses meets the requirements for graduation from an accredited school of nursing and gives the student the advantage of taking the scientific theoretical subjects in the universities or college during three academic years which satisfies the requirements of one year in the hospital. Two additional years above the three academic years are required for the professional course. A number of students are now taking these courses at University of California and at Stanford. The work at Mills College will not begin until October, 1918.

Publications.

The following publications have been issued during the biennial period:

1. Register of Nurses for 1915, 1916, 1917.....January 1, 1918
2. Survey of Schools of Nursing.....March 1, 1918
3. Requirements and Curriculum.....July, 1916
4. Requirements for Accredited Schools of Nursing.....May, 1918

Development.

There has been a great increase in the activities of the bureau during the biennial period, especially since the entrance of the United States into the war. The bureau continues to be the clearing house for all matters having any relation to nursing. We have been able to co-operate with the government in the endeavor to increase the production of nurses and also to hasten certification of graduate nurses for the Red Cross nursing service. The great need for a larger production of nurses to meet the needs of the army, navy and Red Cross has had a stimulating effect on schools of nursing, on universities and high schools, as also on young women in arousing a desire to enter upon this form of service.

The work in the office has increased necessitating the employment of additional clerical force. The work outside the office in the field of inspection and in co-operation of universities and high schools has demanded much of the Director's time and necessitated absence from the office for about two-thirds of the time.

In order to give closer attention to the work in the southern part of the state and to obviate loss of time and expense in travel, it has been considered necessary to appoint an assistant inspector with headquarters in the State Board of Health offices in Los Angeles. The Civil Service held an examination, open to applicants in the United States, in February, 1918, and from the list submitted Miss Kate Sherrill Douglass, R.N., was appointed on June 6, 1918.

Miss Elizabeth Pack, R.N., Assistant to the Director in Sacramento, resigned May 1, 1918, to enter the navy nursing service. This position has been temporarily filled pending an examination by the Civil Service Commission.

The result of the work during the biennial period has been extremely satisfactory, due, to a great extent, to the hearty co-operation of all those concerned in the education and training of nurses. Step by step, we have worked out a system in California which, if not yet complete, is showing results in the increased interest of our communities in their hospitals and training schools for nurses. Since the beginning of war activities in this country, hospitals and schools have been very much handicapped by the increased cost of supplies and food and from the withdrawal of a large number of executives in the schools; but despite these handicaps, the hospitals are showing magnificent spirit in endeavoring to meet the demands placed upon them and to fulfill their duty to the public. A marked change in hospital administration, also in training school work, will probably be seen in the next few years, should the war continue. The functions of the bureau will necessarily have to be increased, and it may be anticipated that provision will be made for the training of another class of workers in the interest of the sick which may necessitate a special preparation not as extensive as the preparation for the registered nurse.

The demand for public health nurses is increasing continually. Through the influence of the bureau special summer session courses have been instituted for public health nurses at the University of California. Schools of nursing have been urged to send their senior students to these courses and also to give a certain amount of public health experience during the course of training as an elective in the third year. This latter idea is being taken up rather slowly, but it is hoped, as the opportunity it affords for the student will be realized, that this special instruction will find favor with many of our schools. The war has already opened up many opportunities and shown us our possibilities for the greater development of our work. This will undoubtedly increase during the coming years and we may look for added stimulus in carrying on the functions of this particular Bureau.

REPORT OF THE BUREAU OF SANITARY ENGINEERING.

C. C. GILLESPIE, C.E., Director.

VALUE OF THE BUREAU TO THE STATE.

As at the end of the last biennial period, the staff and appropriation of this bureau continue entirely inadequate to cope with problems referred by the Bureau of Administration, health officials and the public, and to undertake much needed investigation along numerous lines of sanitary work necessary to the health and welfare of the state.

At the outset, it is pertinent to point out the actual money value to the state of the work of the bureau. It is not difficult to evaluate these benefits. The Bureau of Sanitary Engineering is comprised of technical specialists in this particular branch. It is made up of men who make this business their life work. They are trained in its fundamentals and their experience is always widening by daily contact with sanitary engineering developments and with the many city engineers and others considering sanitary engineering projects for their particular localities. As a result, the engineers and analysts of the bureau are obviously in a position to give correct advice on such matters which might be difficult or impossible to obtain elsewhere, and to forestall many ill-considered outlays for sanitary projects. In most cases plans are thus perfected while the work is still in the formulative stage. The law requires that plans for sanitary projects shall meet with approval by the State Board of Health. It is merely carrying out the law to provide for as intelligent approval as possible. Seldom do such changes increase the cost. More often they result in an actual saving to the community. In one city alone in California a \$200,000 saving was effected through the advice and insistence of the bureau. This sum is more than three times the biennial appropriation of the bureau. In another community a \$12,000-outlay, which never would have given the success expected, was abandoned on the advice of the bureau and a \$6,000-outlay of a different and more suited type built. Such savings are immediate. They more than justify the creation of the bureau and its more substantial enlargement.

In all sanitary projects undertaken, the bureau insists on farsighted planning to anticipate and meet, as far as possible, the demands and developments of the distant future, but at the same time it endorses a program of construction as the needs develop. Thus a community may feel that there is a reasonable certainty that the portions of the plant built today will fit into the works of the future and need not be abandoned as a result of later development. One of the most serious mistakes to be noted in sanitary engineering in California, as inherited from the past, is the gross oversight of such principles. Designers have failed to analyze the conditions, present and future, and naturally they have failed to lay out proper works. One finds "septic tanks," representing hundreds of thousands of dollars, in wide use in California, and yet at the time they were built experienced sanitary engineers knew that the septic tank by itself was only the preliminary stage in sewage treatment. Notwithstanding this, there is scarcely a septic tank of the hundreds in California that is designed or located to fit into a logical

enlargement of the plan. Obviously, such tanks will continue to be gradually abandoned as the demands for higher grade effluent become more insistent.

Besides basic errors in projects, there are a number of common faults which the bureau does much to prevent in the works now built. In sewer systems we often find inadequate grades or poor use made of natural grades; lack of provision for ventilating and flushing sewers, resulting in stoppage and perpetual cesspool odors at manholes; no attention paid to making water-tight joints, resulting in overtaxed treatment plants when the sewers are laid in wet ground, or in an accumulation of roots in a sewer running close to trees; inadequate manhole openings, making maintenance difficult and costly; poor use of syphons; no attention paid to sewer gradients at junctions; poor selection of sewer pumps as to size and type; use of screens which are not easily cleaned; no provision for disposal of screenings; too little attention paid to possibilities of water pollution, to ease of sanitary disposal of the sewage and proper usage of effluent on sewer farms, to special local conditions or to future growth.

Sewage treatment plants plans are often at fault in respect to selection of the type of plant best suited to local needs; capacity of works, present and future; size and number of units; future requirements of effluent and disposal and means of meeting such demands; effect of industrial waste on the treatment; dilution and dispersion if in tidal arms; metering flow of sewage; careless use of by-pass arrangements; lack of operation possibilities and lack of provision for handling and disposing of sludge and screenings.

There is another phase of sanitation in which the bureau helps conserve the resources of the state. I refer to the sewage disposal problem of summer resorts, hospitals and the like in unsewered districts and to the many large waste-producing industries of great value to the state. It is a fact that the tendency is to underrate the waste disposal problem and even to give it no thought in selecting a location until the consequences of a poor sewage disposal make themselves felt; then either the public is compelled to suffer a permanent nuisance or the establishment must establish a sewage disposal usually rendered exceedingly expensive owing to the fact that there are many obstacles and few natural advantages. Almost without exception, establishments such as these are a part of the resources of the state. In solving the waste disposal problem the bureau serves the public by abating a nuisance and contributes to the resources of the state by helping the enterprise in one of its problems.

The chief work of the bureau, however, deals with the prevention of spread, contrasted with the cure, of water-borne diseases, including typhoid, dysentery, diarrhea, cholera, etc., by applying principles of sanitary engineering to the purification of water and the sanitary disposal of sewage. In addition, it has to do with the general improvement of quality of water supplies, and the disposal of sewage in the least offensive manner, the control of stream pollution by sewages and offensive trade wastes, the sanitation of swimming pools, and plumbers' licensure.

Those typhoid measures directly applied by the bureau include the following:

- (a) Detection of polluted supplies by laboratory analyses and field surveys of water sources and watersheds.
- (b) Requiring the installation of proper water and sewage treatment works and seeing that they are conscientiously operated.
- (c) Preventing the pollution of streams used for drinking purposes in the raw state.
- (d) Encouraging the installation of sewers and sanitary disposal to replace cesspools and privies.
- (e) Preventing the use of sewage to water vegetables used as human food.
- (f) Prevent the taking of shellfish from sewage-polluted flats.
- (g) Placarding polluted streams in vacation regions and requiring sanitary equipment and accommodations in summer resorts.

Other means of typhoid control, notably vaccination, detection of carriers, control of milk supplies, etc., are in the hands of other bureaus and departments.

The net result of all the efforts at typhoid control has been to reduce the typhoid death rate per hundred thousand in California from 13.6 in 1914, the year before the bureau was created, to 9.7 in 1915, 7.1 in 1916, 7.4 in 1917 and indications are that a rate of 6.8 will be accomplished in 1918. The yearly reduction in typhoid deaths averaged 8.8 per cent for period 1910 to 1914, inclusive. The bureau was established in 1915. The average annual reduction since that date has been 15 per cent, or, the typhoid drop has been speeded up 200 per cent in these recent years. Had the former rate of reduction continued, there would have been 280 additional deaths from typhoid in the past four years, for the most part youths, on the threshold of a useful career, for such is the selectiveness of this disease. A loss to the state in vital capital of \$1,400,000 has been avoided.

California is now near the lowest of the states in the typhoid death rate and yet there is still a vital loss to the commonwealth by this disease, costing the state over \$1,050,000 per year, which can be reduced only by measures for improved water supplies, sewerage and sewage disposal, cleaner streams, cleaner milk, vaccination, detection of carriers and the general correction of filth conditions.

A quotation from the Ohio Public Health Journal of May, 1918, indicates the estimate of the Ohio State Board of Health of the work in California:

"California's Record in Lowering Typhoid Rate."

"It would be difficult to find better statistical proof of the proposition that typhoid fever is preventable than that which is provided by a comparison of typhoid death rates for the past decade in Ohio and California. Starting from approximately the same level, both these states have decreased their typhoid mortality. California's decrease has been so much more rapid than Ohio's, however, that the Pacific coast commonwealth's rate is now only half that of this state."

About 9,000 samples of drinking water have been analyzed for their safety and fitness for domestic consumption by the bureau, on which 63,000 determinations have been made. Upwards of 45 cities and towns have installed water disinfection on the recommendations of the bureau, until now 1,200,000 people, over half the urban population of the state, is supplied with water from sources equipped with disinfection works. No small cut in typhoid is due to this one line of endeavor. It is significant that, except for a small epidemic at Merced Falls, there has not been a water-borne outbreak of typhoid in California in the past three years.

However, chlorination and sanitary equipment works generally, without exception, are not fool-proof. All must have constant and conscientious attention and one of the big tasks of this bureau henceforth must be the periodic supervision of plants at frequent intervals. Inability to do this explains the outbreak at Merced Falls cited above.

The bureau is also an important factor in the general sanitary uplift into which the state and nation are entering. Almost solely through its persuasion, sewers have been installed in Folsom, Corcoran, and are about to be installed in Manteca, new sewage disposal plants have been put in or are under construction at Reedley, Folsom, Folsom Prison, Beverly Hills, Ukiah, Santa Barbara, Kingsburg, Paso Robles, Stockton, and hundreds of homes and institutions. Vital improvements in operation have been effected in the sewage treatment and disposal of nearly every plant which the bureau inspects. These accomplishments do not take into account installments or improvements made on the initiative of the community itself.

In pursuance of the above work, under the law there are upwards of 700 water supplies and sewer systems which the bureau is obliged to examine at least once for the purpose of licensing. It is to be regretted that only about 150 have been inspected to date.

To the bureau is also delegated the licensing and regulation of swimming pools, now numbering nearly 300 and increasing at the rate of three or four a month. Progress on this has been limited to mere registration through lack of field men.

Plumber's licensure in the hands of the bureau has been quite a task. There are over 4,000 plumbers, for whose registration and examination the bureau is responsible.

These notes show only the accomplishments of the bureau from a purely health conservation standpoint. Demands are constantly received for assistance in relief from some purely nuisance condition and the bureau endeavors to assist in relief, believing that by so doing it aids the sanitary movement, as the public generally still looks on noxious odors as sources of disease and their eradication is still one of the tasks of health officials.

The above notes are not only justification for the formation of the bureau, but for its greatly increased financial support.

FUTURE RESPONSIBILITIES OF THE BUREAU.

With better support the bureau can profitably enlarge on every line of past activity and particularly the following:

1. Stream pollution surveys to locate and measure the importance to the commonwealth of each source of pollution and to accomplish the

elimination of dangerous pollution. Until the State Board of Health has concluded such surveys on each stream watershed, it can not intelligently fix a standard of cleanliness for a given stream nor pass on applications for sewage disposal into it. Accurate data and information are the need of the day.

2. The improved operation of sanitary works. In California there are no really high-grade operators of water and sewage treatment plants. And yet faithful and intelligent operation of such plants is the only protection the public has. Without it the plants are a disgraceful ornament, wasteful in time and money, failing to secure their functions or protect the public health, and so become a local argument against further outlay. There is but one means of attacking this situation. The bureau must stimulate local interest by carefully inspecting the plant and conferring with the operator at frequent intervals. Record sheets must be devised and records kept, copies of which must be submitted to the bureau for careful scrutiny and check as to the evident care in operation. Such reports are being received weekly from four waterworks in the state where the raw waters are most dangerous.

Our experiences in chlorination are of interest, this being the prevailing water treatment in California today and the only safeguard against disease where it is used. Nine or ten chlorinators have been under observation, some of which were under private ownership and others operated by the communities. The results of the inspection showed that in about 50 per cent of the inspections the machines were out of commission or in such shape that they could be operated only intermittently. There seemed to be the following explanations for these decidedly unsatisfactory findings:

- (a) The machines are easily corroded by moist chlorine gas or strong chlorine solutions and so far metals or alloys which will resist the corrosion have not been discovered. Certain grades of chlorine gas received on this coast are not pure and are exceedingly corrosive. Much trouble has been encountered with certain cylinder valves due to their lack of sensitiveness and the suddenness of shock with which cylinder pressures reach the machine, often bursting some part.
- (b) Parts of the machine quickly become eaten out all together, or plugged, and the regulating valves and pressure regulators, which must be depended upon for keeping up the desired feed of gas, become sluggish and finally inoperative, with the result that the dose of chemical, especially at night, is considerably below that necessary for disinfection.
- (c) The operators to whom the task of operating these machines is delegated are not ordinarily men of much mechanical bent and without some higher supervision these conditions are not corrected and they are often unreported.
- (d) When reported, and new parts are needed to replace defective ones, it has been found that the chlorinator manufacturers and their local agencies are, for some reason, exceedingly slow in making the replacements.

- (c) None of the above situations have ever been reported to the bureau or come to its attention except through its own investigation. A case in point is Merced Falls. Probably no other chlorinator in the state has obtained so little attention by the management or the operators and quite so much insistence by the State Board of Health that it be operated properly, on account of the serious pollution in the water it is dependent upon to correct. As a result, during the month of May, 1918, one of the worst water-borne epidemics in the state, expressed as a rate, broke out in the town. A case rate of at least 4,500 per 100,000 population occurred and 30 per cent of the town suffered from some more or less severe intestinal ailment. All this demoralization could have been avoided, beyond the shadow of a doubt, had the management and the operators appreciated their responsibilities or even worked in co-operation with the State Board of Health.

A very definite procedure has been worked out by the bureau to make the operation of chlorinators more effective but the plan is not fully operative because it requires a great deal more periodic inspection and co-operation between the local attendant and the bureau than we have been able to make. The plan includes:

- (a) Improvements in the installation of the apparatus whereby the flow of water can be measured at any moment, the cylinder of chlorine weighed, and the housing so constructed and insulated that the fluctuation of temperature on the inside is reduced to a minimum. In very few installations are these features now incorporated.
- (b) The keeping of a weekly record of operation which shall show for each visit to the machine the flow of water at the time; the flow of chlorine at the time and the flow at which the machine was set to feed; the calculated dosage as found and as set; the air temperature inside the house and the readings of the various pressure gauges; weight of cylinder once a day, or as often as the chlorine consumed totals an amount which can be weighed; the calculated actual dosage based on the chlorine consumed and the amount of water treated over the same interval. A copy of this report to be sent to the State Board of Health on Monday morning of each week with a letter describing any difficulties or defects interfering with the operation of the machine.
- (c) The installation of an emergency chlorinator outfit consisting of a barrel in which bleaching powder may be put in solution and a feeding device for regulating its flow into the supply, to be used at times when the chlorinator is out of commission. Until some such program is made operative it is clear that no material improvement has been accomplished in the treatment of water supplies through chlorination.

In the improved operation of sewage treatment plants the bureau has been unable to devote any time or attention during the past year, other than inspection of a few of the plants at intervals of several months, but it is highly important that the same regular attention be given to sewage treatment plants as to waterworks.

(3) Inspection on construction. With its present facilities the bureau has practically no connection with plans once approved until faulty results from the completed structure call attention thereto. In the period of construction it is almost inevitable that some unforeseen circumstances will arise which make it convenient to alter the plan of works, often in vital details. It often happens that the change, made by those ignorant of the sanitary workings of the structure, defeats its whole purpose. Reliance must now be placed on the honesty of those in charge to get approval of the bureau before making the desired changes. Too often this trust is misplaced. The remedy will lie in occasional inspection by the bureau while the work is in progress. The bureau has not been able to do any work whatever on inspection of construction of sanitary works during the past year. Unfortunately, this has resulted in the need for radical changes, especially in chlorination plant installations.

(4) Encouraging the installation of sewer systems with good sewage disposal, cleaner and safer water supplies and the more extensive use of filtration according to modern practice. All filter plants in California represent an antiquated type. There is a noticeable demand for cleaner water. Sacramento, the Sierra foothill cities and the lower San Joaquin towns—Antioch, Pittsburg and Martinez—also Vallejo and Benicia will no doubt decide on filtration shortly after the war.

(5) Proper disposal of cannery, winery, packing house, oil and industrial wastes generally. The handling and treatment of industrial wastes is more complicated and has less precedent than the handling of municipal sewage. No two problems are alike and the owners of the enterprise themselves are in most cases totally unfamiliar and untrained in the treatment of their waste products. There results certain nuisance which handicaps the operation of the plant and deters other industries from venturing in a like field. To aid the industries in the treatment of their wastes appears to be a proper function of the bureau and with the great growth of the industries expected to follow the war it must be prepared to take up this problem more energetically.

(6) Conducting long-time studies along lines of research and experimentation as an aid to the communities of the state in determining and demonstrating scientific facts entering into general sanitary engineering problems. In the laboratory there is no end of possibilities along lines of original research. The test for presence of sewage in water depends on the certain identification of certain specific sewage organisms. In the present state of this determination there is always an element of uncertainty in the conclusions by reason of the fact that in Nature there are harmless organisms which also respond to the culture media now used for the sewage organism, *B. coli*, and because the technique and interpretation are far from standard, laboratories in many parts of the country are working on this problem in an endeavor to reach reliable conclusions on this most important test. The laboratory of the bureau has done enough work on the problem to convince itself that its study requires a systematic plan of work and the ability of some one to concentrate on it for a long period.

In California a careful study of the growth of algæ in water supplies is very much needed. Nearly two million people in California depend on waters subject to more or less storage and hence to the development

of serious algae growths. None of the localities make any attempt to handle this algae problem scientifically. It is very evident that the "hit or miss" work now done on the problem is not yielding the best results, neither from the standpoint of costs nor the elimination of the trouble. As the problems are all very similar in each community, it seems plain that duplication of study of the organisms by each locality is unwise and that the same results can be more cheaply and perhaps better obtained if the bureau were to carry on the necessary investigative work.

Another profitable line of experimentation is on sewer farms. In 1916 the United States Department of Agriculture began the study of a few typical sewer farms in California with a view to deciding the best means of preparing the land, applying the sewage and croppage. However, progress was stopped due to the declaration of war. The planning of the investigation, however, will serve to indicate the importance attached to it.

In filtration of water supplies California has not made as rapid strides in adopting modern filtration as has the East. The attitude of the public in California is that it "wants to be shown." There is no doubt but that once the possibilities of modern filtration can be demonstrated, California cities will adopt it widely. In 1916 the city of Sacramento, which was then considering filtration of the Sacramento River water, could no doubt have been convinced of the superiority of filtered Sacramento River water were an experimental plant built. Unfortunately, the proposition did not go through but if it had it would have been highly desirable, from the standpoint of the movement, for the bureau to have responsible for the operation of the plant.

The cases cited above are merely a few specific instances where time and money can be spent by the state in advancing state sanitation more economically than can each community singly. Other instances are constantly making their appearance. It is to be hoped that in the future the activities of the bureau can extend along this line.

(7) Garbage disposal is a problem of a magnitude only slightly less than sewage disposal. It is a specialized field for sanitary engineers, yet one which every town trustee feels competent to solve. The result is a wasteful policy or none at all. As a result of food conservation measures, utilization of garbage on a profitable basis has properly come to the forefront. The highly complicated process of garbage reduction, recovering products of value, is being considered by the larger cities of the state, as is also the feeding of garbage to hogs. Both of these means of disposal will, it is safe to say, remain as permanent institutions. Systematic study should be applied in putting them on the best possible working basis. At the present time each community, starting in entire ignorance, attempts to work out the problem for itself. There is an excellent opportunity for the bureau to take hold of this problem and apply information acquired in the various communities to the solution of the problem of a particular community.

(8) Swimming pool sanitation. The public natatorium, municipally or privately owned, is becoming extremely popular, especially in the interior and warm-belt towns throughout California. Medium-sized towns like Madera, Tulare, Visalia, Selma and scores of others find that these pools are not only popular but profitable. In addition,

schools, the Y. M. C. A. and similar public institutions are providing these pools as part of their attractions. The growing popularity of swimming pools in California is shown in the following table containing all pools whose dates of installation are known to us:

Year	No. of pools built	Year	No. of pools built
1880-1890	5	1911	8
1890-1900	11	1912	9
1900-1905	7	1913	11
1905	6	1914	10
1906	4	1915	21
1907	0	1916	31
1908	5	1917	23
1909	10	1918	6±
1910	10		

In most pools the water is purchased from the public supply at a high total cost per filling. The result is that the water is not changed with the frequency necessary to keep it clean. Where the water is heated, the item of fuel expense works toward the same end. Need of regulation is urgent.

The last legislature enacted a swimming pool law, as proposed by the State Board of Health. The main provisions of the law are the requirement of the holding of a permit from the State Board of Health of every public natatorium and the delegation of the power of regulation to the State Board of Health. In pursuance of the act, the bureau prepared application blanks which contain a list of fifty-seven questions, the answers on which are intended to be sufficient for a decision on the granting of a temporary permit, pending inspection at a subsequent date. The application blank was sent to all the swimming pools in the state, numbering about two hundred and sixty. Granting of final permits is now held in abeyance pending the adoption of rules and regulations of general application. Little accurate or comprehensive data is extant on swimming pool sanitation, particularly as regards the treatment of the water supply. Accordingly, the bureau has had to undertake studies of its own on the various types of pools in order to be able to adopt regulations which shall be thoroughly sound and necessary. So far two types of pools only have been investigated; one, the pool of the Y. M. C. A. in Berkeley; the other, the pool of the Idora Park Company, Oakland. The former is a well-constructed, tile-lined pool for which the water is obtained from a tunnel on the premises, heated, refiltered and recirculated for three days to two weeks, when the tank is completely emptied. Applications of bleaching powder solution are made to the pool in a crude way each night. Several hundred analyses were made on this pool over a three-months' period, testing out various modes of operation. The following conclusions are quite definitely established:

- (a) Refiltration of the swimming pool water at the rate of three gallons per square foot of filter per minute, such that the entire contents of the pool are recirculated during each swimming day, will maintain the clearness of the pool water without the use of filter alum.

- (b) The filter has little effect on the bacterial content.
- (c) The bacterial content of the pool increases rapidly with use so that within one or two days at the outside the pool water contains as many as thirty to one hundred thousand bacteria per cubic centimeter; this without treatment.
- (d) The use of chloride of lime in the manner described appeared to be quite haphazard but it is apparent that if carefully distributed and applied at a time when the contents of the pool are still in motion, a dose of ten to twelve pounds of bleaching powder per million gallons of water is effective in building up a solution in the pool which is not objectionable to bathers and yet will keep down the bacterial content of the pool at or below a drinking water standard for at least twenty-four hours.

The investigation of the pool at Idora Park is much more extensive and has not yet been completed. This is one of the larger outdoor fresh-water pools of the coast, the water for which is obtained from wells on the premises, refiltered at the rate of two gallons per square foot of filter per minute and recirculated once in three days, assuming eight hours' filter operation each day. In addition, the effluent from the filter is chlorinated. The analyses indicates quite clearly that chlorination, using a dose of 7.5 pounds per million gallons on week days and 9.6 pounds per million gallons on Saturdays and Sundays, is sufficient to maintain a bacterial count below one hundred except on days of very heavy patronage. For such conditions we have not yet established the necessary dose. Development of algæ growths in the pool is an important problem in this instance and the further study of this pool will be aimed principally at feasibility of controlling the growth. The plan of study is first to note the influence of filtration on the algæ content and toward the end of the season, when the pool will be emptied, to try copper sulphate. The growth of algæ in the pool increases greatly the difficulties of filter operation, as the sand surface clogs in a short time and runs shorten to three or four hours.

Some work has been done in the laboratory on the identification of the bacterial flora of swimming pools, especially the coccus group, with a view to determining whether the members of the group are present in sufficient amount to make this group a better index of the sanitary conditions of the pool water than is the total count or the *B. coli* content. This investigation has not been completed. The indications are that members of the coccus group are not present in sufficient quantities to be a sensitive index of the objectionable contamination, but possibly some other species will be found to meet the requirements of a good index.

On account of the extremely rapid rise in the popularity of swimming pools and the great increase in the number of new pools with attendant inquiry directed to this bureau, it became necessary to prepare a set of statements indicating the scope of future regulations. This material has never been issued in pamphlet form but has been multigraphed and sent to a considerable number of pool managers.

(9) Summer resort sanitation. Regulation of both sewage disposal and water supply is urged in these pleasure places. Calamity and fear

of vacationing in the mountains will surely result if sanitation in these places is not put on a high plane. Aside from the preparation of a bulletin on sewage disposal at summer resorts and the inspection of about twenty resorts, the bureau has made little progress on this line of work.

(10) Oyster bed regulation. In a good many sections, especially about San Francisco Bay, a considerable oyster industry is springing up. Native oysters and Eastern oysters transplanted for fattening are grown here. In some cases the beds have been shown to be polluted and from the habits of the oyster the bivalve is polluted to far greater extent than the water in which it lives. The problem includes long-time pollution studies to learn what beds are suitable for the industry, what beds are not, the source of the pollution and an analysis of cost, and the like, to determine whether the industry is worth the cost of protecting the beds from pollution. On account of the absence of legislation covering this subject, the State Board of Health devised and the 1917 legislature enacted Chapter 48 which, in brief, places the definition of polluted area in the hands of the State Board of Health and empowers it to prevent the taking of shellfish from duly placarded areas.

(11) Examination of ice and ice supplies. It is a well-known fact that ice manufacture does not destroy all living organisms. Freezing does eliminate a great deal of the pollution but the percentage is not high enough to yield a safe ice if made from badly-polluted waters. Hence, the sources of water for ice manufacture should be examined and certified. Likewise, the handling of ice is subject to material regulation, though this is probably a problem for local health concern. The bureau has not been able to undertake this work.

(12) Examination and certification of bottled waters as unaffected by sewage contamination. It is a serious enough reproach that bottled waters are necessary and they should be known to be *not unhealthful* in their sources as well as that they shall possess the therapeutic values claimed. In spite of repeated requests for analyses on bottled waters, the bureau has been unable to pursue this work.

NEW WORK DEVELOPING.

In addition to the foregoing matter, the following have developed as exceedingly important since the last biennial report:

(1) Co-operation with military authorities. The matter of sewerage, sewage disposal, water supplies and purification, of the army and navy camps and communities round about, has given the military officials in charge a great deal of concern and requests for the assistance of the Bureau of Sanitary Engineering on these particular problems have been freely made during the past year. A large percentage of our principal work in these last twelve months has been in co-operation with the military authorities. Report was rendered on the sewage disposal of Camp Kearny and the water supply, as furnished by the city of San Diego, was under investigation until the bureau felt assured that the method of treatment was adequate and dependable. In Camp Fremont the bureau actually made the surveys for the sewer system and co-operated with the 'civilians' Engineers Commission in the design of

the system. At Mather Field near Sacramento the bureau has advised the commandant in charge of construction on the sewage disposal and water supply. The same is true of March Field near Riverside. At Mare Island the principal difficulty has been with the quality and quantity of the water supply. This has been a particularly troublesome problem to the Mare Island officials and the city of Vallejo in which it is located. The bureau has spent a large amount of time on the problem. While the question of quantity has not yet been satisfactorily adjusted, it is felt that the safety of the supply has been much improved.

Practically all of the military establishments in California are making use of the laboratory facilities of the State Board of Health for frequent control analyses of the water supply.

(2) Sanitation of water supplies and sewage disposal of war industry plants, shipyards, etc. With a view of maintaining a high standard of health among the employees in these lines of work, the bureau is being called upon repeatedly by the United States Shipping Board to have corrected some menacing condition in the water supply or sewage disposal, especially in the communities where the workmen live. In California important shipyards and war work are centered in Eureka, San Francisco, Benicia, Los Angeles and San Diego. In Benicia and Eureka the conditions surrounding the water supply are particularly menacing and the greatest amount of vigilance and checking up are necessary.

(3) Registration of plumbers. One of the enactments of the 1917 legislature was the plumbers' registration act which provides, briefly, for the appointment by the State Board of Health of a plumbers' examining board in each county of the state and the registration and examination of practically all plumbers in the state by these boards, under the direction of the State Board of Health. The administration of the act has been placed in the hands of this bureau. The work has proven to be extremely time-consuming, both in the appointment of suitable local examining boards and the registration of plumbers. It is estimated that fully fifteen per cent of the time of the bureau has been devoted to the enforcement of this particular act to date, which has included the appointment of the boards and the registration of plumbers. The examination is yet to be held. There are approximately 3,400 plumbers to be examined. The act provides for the payment of a fee of \$2.50, \$1.00 of which is paid to the contingent fund of the State Board of Health, presumably for the administration of the act, though by all odds and bulk of the administration has been provided by the bureau and the expense of the work has had to be met out of the bureau's own appropriation.

There have already developed a number of serious weaknesses in this plumbers' registration act. In the first place, it limits itself to the plumbers who install work in cities and towns having a public sewer system, provided that the plumbers working therein are not registered and examined for their fitness to install plumbing by the local board of health. It seems to be a fact that plumbers doing work outside of the incorporated communities should be regulated considerably more than those in the communities, which in most cases are now subject to more or less local regulation. Furthermore, the act provides explicitly

only for the examination and certification of plumbers and does not clearly provide for the preparation of a state plumbing code and the inspection of the plumber's work to see that he works in accordance therewith. Again, the act does not provide for the reimbursement of the local examining boards except for the examination of the plumber, of which only one is required. The renewal fee of \$2.00 per year is to be paid to the State Board of Health, without provision for reimbursing the local plumbing boards. Under the circumstances it is anticipated that it will be difficult to secure members for the plumbing boards once the examination is completed, as the duties will be largely inspection, and without provision for compensation, there is little likelihood that members will wish to spend their personal funds and time on the work.

It is highly desirable that this act be either repealed or amended in the following respects:

- (a) Providing for the registration, examination and certification of all plumbers who personally install plumbing work in the state of California, regardless of whether the work is within or without the limits of an incorporated community and whether there is local supervision of plumbing matters.
- (b) The formulation of a state plumbing code. Several other states and societies are working on this subject and no doubt a national code, after which the state codes may pattern, will be gotten out.
- (c) The appointment of a plumbing inspector as an independent office, or under the direction of the State Board of Health, with two or three assistants, to enforce the state plumbing code.
- (d) The providing of ample funds for the proper enforcement of the act.

RECENT SANITARY ENGINEERING LEGISLATION IN CALIFORNIA.

The 1917 legislature has enacted or amended the following statutes: *Chapter 754.* Amended Domestic Water Supply Act so that the State Board of Health has supervision over both physical and hygienic aspects of quality of supply. Can now require reports of operation of plant, appointment of operators satisfactory to the State Board of Health, addition or modification in plant or new plants, approval of plans; all on severe penalties, including fine or injunction for failure to comply. Almost all new projects in water supply are now submitted to the bureau for opinion. The communities seldom submit plans for changes in the system. Experience shows, however, that it would be desirable, from the standpoint of the community, to consult with the bureau on modifications as well as complete installations. A start has been made on receiving reports of operation of plants. Reports received are carefully scrutinized and desirable improvements pointed out by the bureau; or if necessary, a representative endeavors to make a visit to the community in question. So far the bureau has not exercised its prerogative of appointing operators who shall meet with its approval.

Chapter 600. Amended Sewage Disposal Act to give State Board of Health comprehensive supervision over nuisance and hygienic aspect of disposal of sewage, garbage and offensive industrial wastes in streams,

lakes, salt water or on land. Can now require reports of operation of treatment plants, appointment of operators satisfactory to State Board of Health, approval of plans, additions or modifications in plant or new plants; all on severe penalties for failure to comply, as under Water Act. Most communities now submit plans for new work for approval by the bureau but, as in the case of water supplies, seldom are plans for modification or extension submitted, though this would be highly desirable. The bureau exercises its report prerogative by requiring reports from users of sewage on sewer farms, in particular, to discover the use of sewage on garden truck used green for human food. There are approximately seventy sewer farms in California.

Chapter 63. Licensing of swimming pools under recent state legislation. All pools have been required to apply for permit from the State Board of Health to operate or to make improvements and to have plans approved by State Board of Health. Application requires answer to some sixty questions bearing on healthfulness and cleanliness of the pool. Temporary permits are granted, pending investigation. These must be kept on display at the pool. It is intended to devise swimming pool regulations as soon as data accumulated is conclusive. About 210 pools have applied for permit.

Progress on this act is limited to conducting intensive study of water supply of swimming pools. On pool under investigation study includes study of effectiveness of filtration, with and without the use of artificial coagulant, effect of bathing on appearance and bacterial counts in pool, effect of various modes of swimming pool disinfection, *e. g.*, bleaching powder applied to pool nightly, bleaching powder solution added to circulating system, use of chloramine compounds applied to pool nightly. Contemplate study of coccus group of bacteria with view of determining if this group is a better index of the danger in a swimming pool than total count.

Chapter 48. Legislation passed regulating taking of shellfish from polluted water. State Board of Health determines areas from which shellfish may not be taken. No investigations along this line have yet been made.

Chapter 65. Requires the registration of all plumbers personally installing work in incorporated towns in California having a sewer system, and their examination by county examining boards appointed by the State Board of Health and subject to its jurisdiction. Plumbers passing the examination receive a certificate of competency, renewable each year. Progress on this act has been limited to the appointment of examining boards in all counties affected by the act and registration of practically all plumbers in the state, numbering about 3,400. It is intended to hold an examination in the near future and to grant certificates of competency to the plumbers passing.

This law appears to be weak in several respects. In the first place it applies only to plumbers working in incorporated communities having a public sewer system and the experience of plumbers and health officers is that the plumbing work most in need of regulation is that outside of such incorporated communities. There is also some criticism of the act since it does not provide for the examination of plumbing inspectors. As soon as the coming examination is over it is probable that another weakness will develop due to the lack of interest in the enforcement of

the act by a few of the local boards. These men receive a fee based on the number of plumbers examined and once the examination is over they receive no further remuneration of any kind. Obviously, it will be difficult, and in some counties impossible, to find men willing to serve on the board under these conditions. If the law is to be made effective it must be placed in the hands of a full-time state plumbing inspector and provision made for financing his work. He should be enabled to investigate all charges of incompetency and to hold frequent examinations in each county of the state. It appears that there is ample work for one chief plumbing inspector and two or three deputies with proper clerical force. Total fees received under the act will scarcely amount to more than \$7,000 per year; this sum is entirely inadequate to handle the act properly.

STAFF AND APPROPRIATION, 1916-1918.

Due to a slight increase in the biennial appropriation from \$30,000 to \$45,000, it was possible to make some enlargement of the staff and particularly to establish a branch office and laboratory in Los Angeles. The staff on organization in 1915 started off with C. G. Gillespie, director; Ralph Hilscher, assistant engineer; Frank Bachmann, chemist and bacteriologist; Joseph Doman, sanitary engineering assistant; Miss A. M. Tridel, clerk, and Cornelius Herb, laboratory helper. Since that time the following changes have been made in the staff:

Mr. Ralph Hilscher was transferred to take charge of the branch office in Los Angeles; his place was filled by Mr. Clyde F. Smith, assistant engineer, who has had long experience in sanitary engineering work with the New York State Board of Health, Massachusetts State Board of Health and the Chicago Sanitary District. Mr. Doman left the bureau in September, 1917, to join the Army. His place has been filled by Mr. Ray F. Goudey, engineering assistant; Mr. Goudey is a graduate of Massachusetts Institute of Technology in 1917. Mr. Harry N. Jenks, graduate in civil engineering, University of California, in 1916, was employed for a few months as engineering assistant, which position he left for work in the Far East. Numerous changes have been made in the laboratory and stenographic forces.

SUMMARY OF WORK PERFORMED.

Sewage Disposal.

Permits granted	35
Reports to communities	42
Inspections	267
Reinspections	53
Plans reviewed	56
Tests of sewage treatment plants	3
Stream pollution surveys	4

Water Supplies.

Permits granted	42
Reports to communities	52
Inspections	215
Reinspections	36
Plans reviewed	5

Swimming Pools.

Temporary permits granted-----	209
Inspections -----	8
Reinspections -----	2
Plans reviewed -----	9

Special Investigations.

Sanitary surveys -----	8
Garbage inspection, Oakland-----	1
Garbage inspection, Seal Creek piggery-----	1
Mosquito nuisance, Long Beach-----	1
Typhoid epidemic, San Pablo Dam-----	1
Typhoid epidemic, Merced Falls-----	1

Distribution of the above work by communities is as follows:

Alturas	Dinuba	Isleton
Anaheim	Dixon	Jackson
Antioch	Downieville	Jamestown
Arcadia	East Bay Cities	Japanese Camp
Arroyo Grande	El Centro	Keene
Atascadero	Eldridge	Kennett
Auburn	Elk	Kingsburg
Bakersfield	Elk Grove	Lakeport
Banning	El Monte	Lincoln
Bartlett Springs	El Portal	Linda Vista
Bay Point	Elsinore	Lindsay
Benicia	Engelmine	Livermore
Beverly Hills	Escalon	Lompoc
Biggs	Escondido	Long Beach
Bohemian Grove	Eureka	Los Alamitos
Boulder Creek	Exeter	Los Angeles
Brawley	Fairfax	Los Banos
Brookdale	Fallen Leaf Lodge	Los Gatos
Byron Hot Springs	Firebaugh	Madera
Cabazon	Folsom	Manor
Calexico	Fort Bragg	Manteca
Calipatria	Fortuna	March Field
Calistoga	Fowler	Marysville
Calwa	Fresno	Mayfield
Camp Baldy	Friant	Mendocino
Camp Fremont	Fullerton	Menlo Park
Camp Kearny	Galt	Merced
Camptonville	Glen Alpine Springs	Merced Falls
Capitola	Glendale	Miramar Beach
Chico	Grimes	Modesto
Chino	Groveland	Mountain View
Chula Vista	Guasti	Napa
Cloverdale	Gustine	National City
Clovis	Hammond	Newman
Coalinga	Hammonton	Newport Beach
Cold Springs Tavern	Hanford	Niland
Colfax	Hayward	Oakdale
Colton	Hayward Heath	Oakland
Colusa	Healdsburg	Oceanside
Compton	Hemet	Ontario
Contra Costa County	Highlands	Orange
Shore Towns	Hobart Mills	Oroville
Corcoran	Hollister	Pacific Grove
Corona	Holtville	Palmdale
Crockett	Huntington Lake	Palo Alto
Decoto	Imperial	Parlier
Dillon Beach	Irvington	Pasadena

Paso Robles	San Fernando	South San Francisco
Petaluma	San Francisco	Stanford University
Pinole	San Gabriel	St. Helena
Pittsburg	Sanger	Stockton
Placerville	San Jose	Suisun
Pleasanton	San Luis Obispo	Sunnyvale
Plymouth	San Pablo	Sunol
Port Costa	San Pedro	Talmage
Porterville	San Rafael	Tracy
Quincy	Santa Ana	Truckee
Redding	Santa Barbara	Tulare
Redlands	Santa Clara	Turlock
Redondo	Santa Cruz	Ukiah
Redwood City	Santa Maria	Vacaville
Reedley	Santa Monica	Vallejo
Represa	Santa Paula	Ventura
Rio Vista	Santa Rosa	Visalia
Riverside	Saratoga	Walnut Creek
Rockwell	Sawtelle	Watsonville
Rodeo	Scotia	Wawona
Roseville	Seal Beach	Weed
Ross	Selma	Whittier
Sacramento	Sierra City	Willits
Salinas	Sisson	Winters
Samoa	Sonoma	Yosemite
San Bernardino	Sonora	Yountville
San Diego	Soquel	Yuba City
San Dimas	South Palo Alto	Yuma, Ariz.

In the laboratories the bureau has analyzed water and sewage for sanitary purposes and made reports thereon, as follows:

Water.

Bacteriological examinations	7,315
Partial chemical examinations	7,021
Mineral analyses	34
Sanitary chemical examinations	146
Microscopic examinations	117
Special bacteriological examinations	15
Bacteriological examination of ice	2

Sewage.

Bacteriological examinations	243
Chemical examinations	17

Trade Wastes.

Chemical examinations	17
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Special.

Mechanical examinations of filter sand	9
Examination of filter alum	1
Examinations of sludge	2
Bacteriological examinations of swimming pools	3
Special examinations	3

Total 14,945

Forty-three communities now have their supplies examined regularly by the laboratories, listed as follows:

Antioch	Fresno	Merced	San Dimas
Azusa	Glendale	Merced Falls	San Jose
Calexico	Grass Valley	National City	Santa Cruz
Calipatria	Hemet	Niland	Santa Paula
Calistoga	Hercules	Ontario	Santa Rosa
Dixon	Kennett	Oroville	Sonora
El Centro	Livermore	Petaluma	Ukiah
Escondido	Lompoc	Pittsburg	Ventura
Eureka	Los Angeles	Redding	Weaverville
Folsom	Los Banos	Richmond	Westwood
Folsom Prison	Menlo Park	Roseville	

About 12,000 letters have been written in the past two years and papers were prepared as follows: "Chlorine Treatment of Water," "Safe Water on Outing Trips," "Some Control Measures for Warm Weather Typhoid Fever in California," "Remarks on Sanitary Swimming Pools" and "Some Observations on Tests for B. Coli."

Two new pamphlets have been issued, entitled: "Contamination of Well Water Supplies" and "Rules and Regulations Governing the Preparation and Submission of Plans and Reports on Sewerage Systems and Sewage Disposal Works, Water Supply and Water Purification Works." A second revised edition has been issued on two former bulletins, as follows: "Sanitation in the Mountains" and "Sewage Disposal for Isolated Residences."

REPORT OF THE BUREAU OF FOODS AND DRUGS.

E. J. LEA, M.S., Director.

The report of the Bureau of Foods and Drugs, herewith submitted is the sixth biennial report of this bureau and covers the period from July 1, 1916, to June 30, 1918.

The work of this department includes the inspection and examination of foods and drugs, in connection with the enforcement of the California Pure Foods and Drugs Acts; the inspection of cold storage plants and the products contained therein; the sanitary inspection of food producing establishments and the inspection and examination of food and other supplies furnished to state institutions. During the last year, however, the Bureau of Foods and Drugs has co-operated quite extensively with the U. S. Food Administration and the U. S. Bureau of Chemistry, in their work concerning war regulations on foods.

During the biennial period, 3,700 official samples of foods and drugs were collected and analyzed. Of this number, 2,210 samples were adulterated or mislabeled within the meaning of the California pure foods or drugs acts.

Two thousand one hundred and eleven cases were reported to the State Board of Health for action; of this number, 1,327 cases were referred to district attorneys for prosecution. The cases which were not referred for prosecution were either corrected, before the hearing held by the State Board of Health, or they consisted of minor matters which were readily corrected without court action. Of the 1,327 cases referred for prosecution, 730 were found guilty. The remaining 597 cases are accounted for as follows: In many instances several cases were referred against the same dealer, but when they came to court, action was taken on only one case and the others were dismissed. More than 200 cases have not as yet been tried. Comparatively few of the defendants in these cases have been acquitted.

The fines for the biennial period amounted to \$9,363.

The cold storage work involves the inspection of 44 cold storage plants in this state, in order to determine their fitness for the storage of food materials, and also the inspection of the foods which are stored therein. Practically all of the storage plants are in excellent condition and well adapted to the purpose of preserving foods. At frequent intervals various foods are found in cold storage plants which are not suitable for human consumption, but the total amount of such unfit food is relatively small when compared to the amount handled by cold storage plants.

A large amount of time has been devoted to the sanitary inspection of stores, shops and food producing establishments. Many of the summer dairy camps in the mountains have also been inspected. These dairies usually provide the least possible amount of equipment and many of their methods are extremely crude. For instance, several dairies were found which made a practice of milking in small filthy corrals, using open pails, and instead of carrying the milk one hundred feet or more to the separator, it was piped through a three-quarter inch gas pipe. The examination of some of this pipe showed a coating of rotten milk about one-eighth inch in thickness for the entire length

f the pipe. The pipes were never thoroughly cleaned and rarely ever
cleaned at all. Many of such dairymen had complained of the diffi-
culty in shipping milk down to the larger cities in a satisfactory condi-
tion. After their errors were pointed out, and corrected, they had no
further trouble. Many improvements have also been made in the
regular dairies in the valleys of the state, as a result of instructions
and recommendations of the inspectors of this department.

The system of examination of supplies for state institutions, as pro-
vided by the State Board of Control, has continued to give good results
in keeping up the quality of food and other supplies delivered to the
institutions. Deliveries of material which did not conform to specifica-
tions have frequently been rejected after examination and analysis by
this bureau. The mere fact that a system of inspection and exami-
nation is in effect undoubtedly prevents to a considerable extent,
unscrupulous dealers from attempting to supply inferior goods.

The amendment to the Pure Food Act, passed by the legislature at
the last session, giving the Bureau of Foods and Drugs authority to
seize and quarantine decomposed and unfit food, wherever found has
been of wonderful assistance in preventing the sale of much bad
material. Before this amendment was passed, it frequently required a
number of weeks to obtain judgment against bad goods in order to
destroy them, and in the meantime the material was usually sold or
disposed of, so that no action could be taken on the goods themselves.

The bureau has co-operated with several commercial associations,
women's clubs and educational institutions in giving lectures on the
particular features of the food and drug laws which were of especial
interest to them.

The California Wholesale Grocers Association, the California Retail
Grocers Association and the California Master Bakers Association
deserve special mention. These organizations stand for pure, whole-
some food products and they are a great source of assistance in enforce-
ing the California pure food laws.

A number of newspapers in the state assist the work of this bureau
in publishing articles concerning violations of the food and drug laws.
Such publicity is of great educational value. It aids honest dealers
and some careless ones, by calling their attention to certain violations
they may be committing themselves. The wilful violators are fre-
quently checked by the publicity and the information is of value to the
general public, as it attracts attention to many articles which are
either adulterated or mislabeled, thereby enabling the consumer to be
more discriminating.

The police and justice courts of the state which have handled the food
and drug cases of this department, have, generally speaking, given
excellent assistance. Occasionally it is impossible to obtain a convic-
tion, owing to political influence, but such cases are comparatively rare.

Gradual improvement is still being made in the labeling of food
and drug products. The quality of canned goods and manufactured
foods appear also to be improving. The majority of wholesale and
retail dealers seem anxious to have their stocks entirely free from
criticism and usually it is only necessary to mention defects in order
to obtain desired results. At the same time, there are many food and
drug manufacturers and dealers who persist in their endeavors to evade
the food and drug laws.

Our force of seven inspectors is not large enough to handle the important problems of this department. There are many times when we could use a force four or five times as large. This is especially true during the season for the canning of tomato products and the drying of fruits.

OFFICIAL SAMPLES—FOODS AND FOOD PRODUCTS.

For the Fiscal Years Ending June 30, 1917, and June 30, 1918.

1917.		<i>Beverages.</i>		1918.	
Legal....33.	Illegal....21.	Total....54	| Legal.... 6.	Illegal....22.	Total....82

The above beverages consisted of cider, ginger ale, fruit juices, orangeade, iron beer and a variety of soda waters. The principal violations included the use of artificial flavors and colors in the soda waters; capsicum in the ginger ale, without the fact being declared in the label; and the manufacture of imitation cider, fruit juices and orangeade.

The sale of imitation orangeade as a genuine article has been very extensive during the past two years; it has been dispensed from large inverted bottles, with cooler underneath. At this writing, the labels have been corrected to read "Imitation Orangeade."

1917.		<i>Bouillon Cubes.</i>		1918.	
None.			| Legal.... 1.	Total.....	1

1917.		<i>Bread.</i>		1918.	
Legal.... 10.	Illegal....25.	Total....35	| Legal.... 3.	Illegal.... 6.	Total.... 9

1917.		<i>Bread Improver.</i>		1918.	
Legal, none.	Illegal.... 1.	Total.... 1	|		None.

Fourteen samples of illegal gluten bread were deficient in gluten; the remaining illegal samples consisted of malted milk bread, butter bread, rice bread and potato products, all of which contained substitute products.

The package containing the Bread Improver bore false statements regarding its merits.

1917.		<i>Butter.</i>		1918.	
Legal.... 5.	Illegal.... 4.	Total.... 9	| Legal.... 6.	Illegal.... 1.	Total.... 7

The illegal samples were rancid, moldy and unfit for human consumption.

1917.		<i>Butter Fat.</i>		1918.	
None.			| Legal, none.	Illegal.... 1.	Total.... 1

This sample consisted of beef fat.

1917.		<i>Cereals.</i>		1918.	
Legal.... 1.	Illegal, none.	Total.... 1	| Legal, none.	Illegal.... 1.	Total.... 1

The illegal sample consisted of decomposed cornmeal.

1917.		<i>Cheese.</i>		1918.	
Legal.... 1.	Illegal, none.	Total.... 1	| Legal.... 3.	Illegal.... 3.	Total.... 6

One illegal sample was mislabeled; two consisted of rancid and decomposed Jack Cheese.

1917.		<i>Chocolate and Cocoa.</i>		1918.	
Legal.... 5.	Illegal.... 8.	Total....13	| Legal.... 2.	Illegal....15.	Total....17

The illegal samples of chocolate were deficient in fat; some contained excessive cocoa shells; some contained sugar without indicating this fact on the label; others consisted of cocoa, but were labeled "chocolate."

1917.		<i>Cocoa Substitute.</i>		1918.	
Legal.... 1.	Illegal, none.	Total.... 1	|		None.

1917.		<i>Cocoanut.</i>		1918.	
Legal.... 1.	Illegal, none.	Total.... 1	|		None.

1917.		<i>Coffee.</i>		1918.	
Legal.... 5.	Illegal....27.	Total....32	| Legal.... 1.	Illegal.... 8.	Total.... 9

The principal violation found in coffee consisted in substituting chicory in part for coffee; a few samples contained roasted cereal and dried fruit pulp.

1917. *Coffee Mixture.* 1918.
 Legal--- 1. Illegal, none. Total--- 1 | Legal--- 1. Illegal--- 1. Total--- 2
 The illegal sample contained no coffee.

1917. *Condiments.* 1918.
 Legal---78. Illegal---69. Total---147 | Legal---44. Illegal---87. Total---131

The illegal samples consisted of prepared mustard, mustard pickles, sour pickles, relishes, chili sauce, miscellaneous sauces, and tomato catsup. The illegal mustard samples were deficient in mustard and artificially colored with turmeric, whereby inferiority was concealed; the other illegal condiments consisted wholly or in part of decomposed vegetable substance.

1917. *Confectionery.* 1918.
 Legal---27. Illegal--- 6. Total---33 | Legal--- 8. Illegal---23. Total---31

One sample labeled and sold as "licorice" consisted of flour, molasses and artificial color with less than 1 per cent of licorice; three samples of maple sugar were adulterated with brown sugar and imitation maple flavor; the other violations consisted of the use of artificial flavor and artificial color in imitation of natural products.

1917. *Crackers.* 1918.
 Legal--- 1. Illegal, none. Total--- 1 | None.

1917. *Cream.* 1918.
 Legal--- 1. Illegal--- 2. Total--- 3 | Legal---20. Illegal--- 5. Total---25

Three samples were deficient in fat; two samples contained excessive sediment, dirt, etc., and two samples were both deficient in fat and contained excessive sediment.

1917. *Cream of Tartar.* 1918.
 Legal--- 2. Illegal, none. Total--- 2 | None.

1917. *Eggs.* 1918.
 Legal---12. Illegal---105. Total---117 | Legal--- 8. Illegal---44. Total---52

The illegal samples of eggs were stale, putrid, filthy and decomposed.

1917. *Egg Albumin.* 1918.
 None. | Legal, none. Illegal--- 1. Total--- 1

This sample was decomposed and unfit for human consumption.

1917. *Egg Whites.* 1918.
 None. | Legal--- 1. Illegal--- 3. Total--- 4

The illegal samples were decomposed and filthy.

1917. *Egg, Dried.* 1918.
 None. | Legal---11. Illegal--- 1. Total--- 12

The illegal sample was decomposed and unfit for human consumption.

1917. *Egg Substitutes.* 1918.
 Legal, none. Illegal--- 7. Total--- 7 | Legal--- 8. Illegal--- 23. Total---31

These egg substitutes included fourteen varieties of preparations composed largely of starch; the majority contained a small percentage of dried skimmed milk and artificial color; a few contained a very small percentage of dried egg or dried egg yolk. None of these materials has the food value nor the cooking value of eggs; they are sold at prices ranging from four to seven times the actual value of the material. The labels on the packages usually contain exaggerated statements, such as: "The contents of this package (four oz.) is equal to 36 eggs." The directions usually indicate that a teaspoonful or part of a teaspoonful is equivalent to an egg in ordinary recipes.

1917. *Extracts.* 1918.
 Legal---30. Illegal---43. Total---73 | Legal---28. Illegal---24. Total---52

The illegal samples consisted of ginger, lemon, orange, peach, peppermint, raspberry, strawberry and vanilla; these samples were either sub-standard or consisted of imitation products.

1917. *Feed.* 1918.
 Legal--- 1. Illegal--- 1. Total--- 2 | Legal--- 8. Illegal, none. Total--- 8

The illegal sample consisted of rice middlings containing excessive mineral matter.

1917.	<i>Fish and Oysters, Canned.</i>				1918.
Legal...34.	Illegal...30.	Total...64	|	Legal...24.	Illegal...49. Total...73

The fish samples included canned cod, crab, herring, salmon, oysters, sardines, tuna and fish sausage. The illegal samples were decomposed and unfit for human consumption.

1917.	<i>Flour.</i>				1918.
Legal...7.	Illegal...4.	Total...11	|	Legal...2.	Illegal...2. Total...4

The illegal samples consisted of sub-standard gluten and graham flours.

1917.	<i>Fruits.</i>				1918.
Legal...4.	Illegal...9.	Total...13	|	Legal...10.	Illegal...10. Total...20

The fruit samples consisted of currants, figs, raspberries, strawberries, oranges, apples, peaches, pears, prunes and raisins. The illegal samples, with the exception of the oranges, consisted of moldy, fermented or decomposed fruit; the oranges were mislabeled as to variety, inferior stock being sold as a better grade.

1917.	<i>Gelatine.</i>				1918.
Legal...7.	Illegal...9.	Total...16	|	Legal...1.	Illegal...18. Total...19

The illegal samples consisted of gelatine containing excessive zinc, arsenic, copper or glue.

1917.	<i>Gum Scrap.</i>				1918.
Legal, none.	Illegal...1.	Total...1	|		None.

This sample was filthy and unfit for human consumption.

1917.	<i>Honey.</i>				1918.
Legal...2.	Illegal, none.	Total...2	|	Legal...6.	Illegal...3. Total...9

The illegal samples contained sugar.

1917.	<i>Ice Cream.</i>				1918.
Legal...34.	Illegal...10.	Total...44	|	Legal...28.	Illegal...8. Total...36

The illegal samples were made from decomposed products; deficient in fat; or artificially colored and flavored in imitation of natural products.

1917.	<i>Icing.</i>				1918.
Legal...2.	Illegal, none.	Total...2	|		None.

1917.	<i>Jellies and Jams.</i>				1918.
Legal...9.	Illegal...8.	Total...17	|	Legal...12.	Illegal...8. Total...20

Some of the illegal samples consisted of decomposed material and some consisted of artificially colored substitute products. In most cases apple stock was substituted for more expensive fruits. A few of the samples consisted of so-called bakers' jelly, composed of cornstarch base with artificial flavor and color, added citric acid for flavor and phosphoric acid as a coagulator.

1917.	<i>Jelly Powder.</i>				1918.
Legal...1.	Illegal, none.	Total...1	|		None.

1917.	<i>Lard and Lard Compounds.</i>				1918.
Legal...1.	Illegal, none.	Total...1	|	Legal...4.	Illegal, none. Total...4

1917.	<i>Liquors.</i>				1918.
Legal...44.	Illegal...256.	Total...300	|	Legal...20.	Illegal...287. Total...326

The adulterated liquors consisted of absinthe, Amer Picon, beer, brandy, cordials, Fernet-Branca, Gilka-Kummel, gins, Pisco, rum, vermouth, whiskey and wine. Practically all of these violations consisted in substitutions of cheaper and inferior liquor for genuine and well-known brands.

1917.	<i>Meats.</i>				1918.
Legal...48.	Illegal...63.	Total...111	|	Legal...30.	Illegal...61. Total...91

The meat samples consisted of bologna sausage, pork sausage, chopped meat (Hamburger) sausage, frankfurters, ham compound, dried beef, corned beef and fresh beef. The bologna, frankfurter and sausage samples contained cereals, which were not properly declared on the label or by a suitable sign. The chopped meats contained sulfur dioxide, a prohibited preservative. Some of the frankfurters contained artificial color which penetrated the meat. The dried beef samples were in glass jars with tin covers; extensive investigation of this class of material showed that the jars often remain on the retailers' shelves for a period varying from one month to more

than twelve months, and is usually not guaranteed by the manufacturer for more than three months; many of the samples contained excessive bacteria and a number were moldy, and in some cases the meat had a decided taint. After a general discussion of this subject, the State Board of Health passed a resolution disapproving of the packing of sliced dried beef in glass containers.

The fresh meat sample was from a tubercular cow. In this case an attempt had been made to remove all of the tubercular glands; however, considerable evidence of their existence still remained. The dealer who was responsible for slaughtering and attempting to trim this tubercular cow was convicted by a jury and fined \$500.

1917.	<i>Milk.</i>	1918.
Legal...49. Illegal...107. Total...156	| Legal...80. Illegal...43. Total...143	

The illegal samples consisted largely of dirty milk, high in bacteria, some samples were deficient in fat, and a very few had been watered.

1917.	<i>Milk, Condensed.</i>	1918.
Legal...13. Illegal...25. Total...38	| Legal...6. Illegal...3. Total...9	

A large proportion of the illegal condensed milk contained excessive bacteria and consisted of Tulip brand condensed skimmed milk and Velvet brand condensed skimmed milk; the sale of these two brands of milk was stopped in this state.

1917.	<i>Milk, Malted.</i>	1918.
Legal, none. Illegal...6. Total...6	|	None.

The illegal samples consisted of brands which had been substituted for other brands.

1917.	<i>Molasses.</i>	1918.
Legal...1. Illegal...3. Total...4	| Legal...16. Illegal...25. Total...41	

The illegal samples of molasses consisted of low-grade molasses, containing excessive mineral matter and impurities.

1917.	<i>Nuts and Nut Meats.</i>	1918.
Legal...1. Illegal...13. Total...14	| Legal...2. Illegal...12. Total...14	

The illegal samples consisted of rancid, wormy, moldy and decomposed material.

1917.	<i>Nut Paste.</i>	1918.
None.	| Legal...3. Illegal, none. Total...3	

1917.	<i>Oleomargarine.</i>	1918.
Legal...1. Illegal...1. Total...2	| Legal...1. Illegal...1. Total...2	

The illegal samples were rancid and decomposed.

1917.	<i>Oils.</i>	1918.
Legal...7. Illegal...5. Total...12	| Legal...6. Illegal...4. Total...10	

Two illegal samples consisted of cottonseed oil substituted for olive oil; the other illegal samples were decomposed, rancid or contained dirty material.

1917.	<i>Pastes, Alimentary.</i>	1918.
Legal...13. Illegal...6. Total...19	| Legal...7. Illegal...20. Total...27	

Most of the illegal alimentary pastes consisted of egg noodles which were deficient in egg; some contained practically no egg at all; the other violations consisted in the sale of wormy noodles, macaroni, vermicelli, etc.

1917.	<i>Pastry and Pastry Filler.</i>	1918.
Legal...7. Illegal...11. Total...18	| Legal...6. Illegal...11. Total...17	

Ten of the illegal samples consisted of macaroons, in which either flour or cornstarch had been substituted for macaroons; and one sample was pineapple cake, which was dirty and decomposed, and in which apple stock had been largely substituted for pineapple; the remaining illegal samples consisted of cream rolls containing no cream, orange cake, orange tarts and orange sticks, artificially colored and flavored in imitation of orange, and pies and shortcake made from dirty and filthy material.

1917.	<i>Pork and Beans.</i>	1918.
Legal...1. Illegal...3. Total...4	|	None.

The illegal samples consisted principally of soya beans, with a very small amount of pork.

1917.	<i>Poultry.</i>	1918.
None.	| Legal, none. Illegal...2. Total...2	

These illegal samples consisted of decomposed chicken.

1917.	<i>Ravioli.</i>		1918.
Legal... 2.	Illegal, none.	Total... 2 |	None.
1917.	<i>Salt.</i>		1918.
Legal... 1.	Illegal, none.	Total... 1 |	Legal... 4. Illegal... 2. Total... 6
The two illegal samples did not conform to the standard of purity.			
1917.	<i>Soda, Bicarbonate.</i>		1918.
Legal, none.	Illegal... 1.	Total... 1 |	None.
This sample does not conform to standard.			
1917.	<i>Soup, Canned.</i>		1918.
Legal, none.	Illegal... 1.	Total... 1 |	None.
This sample was filthy and decomposed.			
1917.	<i>Spices.</i>		1918.
Legal... 31.	Illegal... 9.	Total... 40 |	Legal... 57. Illegal... 19. Total... 76
The illegal samples consisted of decomposed and moldy allspice; mace composed almost entirely of Bombay mace; fruit cake spice composed of exhausted spices and spice refuse; mustard, three containing 50 per cent cereal, and others colored with turmeric; ground black pepper containing decomposed vegetable and animal matter, and poultry condiments containing bran and other foreign substances.			
1917.	<i>Sugar, Maple.</i>		1918.
None.		|	Legal... 3. Illegal... 9. Total... 12
The illegal samples consisted of brown sugar containing imitation maple flavor.			
1917.	<i>Syrups, Fountain.</i>		1918.
Legal... 11.	Illegal... 28.	Total... 39 |	Legal... 6. Illegal... 13. Total... 33
The illegal samples consisted of syrups with artificial flavor and color in imitation of natural products.			
1917.	<i>Syrups, Table.</i>		1918.
Legal... 3.	Illegal... 13.	Total... 16 |	Legal... 26. Illegal... 37. Total... 63
Nineteen of the illegal syrups consisted largely of cane sugar, or cane sugar and glucose, whereas they were labeled and sold as pure maple syrup; the other illegal syrups were labeled to indicate that they contained more maple syrup than was actually present.			
1917.	<i>Tea.</i>		1918.
Legal... 1.	Illegal, none.	Total... 1 |	None.
1917.	<i>Vegetables.</i>		1918.
Legal... 68.	Illegal... 26.	Total... 94 |	Legal... 92. Illegal... 110. Total... 202
The illegal vegetable samples consisted of dried and canned beans, sauerkraut, spinach, canned peas, tomatoes and tomato products. The canned peas contained a coloring matter (copper sulfate) which is not permitted in foods; the other illegal samples consisted wholly or in part of filthy, decomposed vegetable substance. By far the majority of the samples under this head were tomato puree and tomato paste; they were largely collected toward the end of the canning season, and were made from moldy and decomposed stock.			
1917.	<i>Vegetable Compounds.</i>		1918.
None.		|	Legal, none. Illegal... 7. Total... 7
These samples consisted of filthy and decomposed animal and vegetable substance.			
1917.	<i>Vinegar.</i>		1918.
Legal... 34.	Illegal... 9.	Total... 43 |	Legal... 63. Illegal... 18. Total... 81
The illegal samples contained added water or consisted of compounds made from acetic acid as a base and other materials used to imitate genuine vinegars.			
1917.	<i>Waters, Mineral.</i>		1918.
Legal... 1.	Illegal... 1.	Total... 2 |	Legal... 15. Illegal... 1. Total... 16
The labels of the illegal samples contained false and fraudulent statements as to their therapeutic properties.			

UNOFFICIAL SAMPLES—FOODS AND FOOD PRODUCTS.
For the Fiscal Years Ending June 30, 1917, and June 30, 1918.

1917.				Beverages.				1918.			
Legal....	7.	Illegal....	3.	Total....	10	|	Legal....	1.	Illegal, none.	Total....	1
1917.				Bread.				1918.			
Legal, none.		Illegal....	2.	Total....	2	|	Legal....	14.	Illegal, none.	Total....	14
1917.				Butter.				1918.			
Legal, none.		Illegal....	1.	Total....	1	|	Legal....	1.	Illegal, none.	Total....	1
1917.				Cheese.				1918.			
Legal....	1.	Illegal....	1.	Total....	2	|	Legal....	3.	Illegal, none.	Total....	3
1917.				Chocolate.				1918.			
Legal....	1.	Illegal....	16.	Total....	17	|				None.	
1917.				Cocoanut.				1918.			
Legal....	1.	Illegal....	3.	Total....	4	|	Legal, none.		Illegal....	2.	Total.... 2
1917.				Coffee.				1918.			
Legal....	1.	Illegal, none.		Total....	1	|				None.	
1917.				Condiments.				1918.			
Legal....	5.	Illegal....	16.	Total....	21	|	Legal....	25.	Illegal....	28.	Total.... 53
1917.				Confectionery.				1918.			
Legal....	2.	Illegal, none.		Total....	2	|	Legal....	4.	Illegal....	2.	Total.... 6
1917.				Cream.				1918.			
Legal....	4.	Illegal, none.		Total....	4	|	Legal....	1.	Illegal, none.	Total....	1
1917.				Eggs.				1918.			
Legal....	5.	Illegal....	1.	Total....	5	|				None.	
1917.				Egg Whites and Dried Egg.				1918.			
Legal....	1.	Illegal....	1.	Total....	2	|	Legal....	2.	Illegal....	4.	Total.... 6
1917.				Egg Substitutes.				1918.			
Legal, none.		Illegal....	1.	Total....	1	|	Legal....	8.	Illegal....	10.	Total.... 18
1917.				Extracts.				1918.			
Legal....	2.	Illegal....	2.	Total....	4	|	Legal....	3.	Illegal....	1.	Total.... 4
1917.				Fish, Canned.				1918.			
Legal....	11.	Illegal....	15.	Total....	26.	|	Legal....	17.	Illegal....	38.	Total.... 55
1917.				Fish, Fresh.				1918.			
Legal....	1.	Illegal....	1.	Total....	1	|				None.	
1917.				Flour.				1918.			
Legal....	17.	Illegal, none.		Total....	17	|	Legal....	14.	Illegal....	4.	Total.... 18
1917.				Fruit.				1918.			
Legal....	12.	Illegal....	6.	Total....	18	|	Legal....	8.	Illegal....	3.	Total.... 11
1917.				Gelatine.				1918.			
Legal....	8.	Illegal....	12.	Total....	20	|	Legal....	6.	Illegal....	10.	Total.... 16
1917.				Ice Cream, Ice Cream Filler.				1918.			
Legal....	7.	Illegal....	1.	Total....	8	|	Legal....	2.	Illegal, none.	Total....	2
1917.				Iceine.				1918.			
Legal....	2.	Illegal, none.		Total....	2	|				None.	
1917.				Jellies and Jams.				1918.			
Legal....	10.	Illegal....	6.	Total....	16	|	Legal....	3.	Illegal....	1.	Total.... 4

1917.		<i>Lard and Lard Compounds.</i>		1918.	
Legal...	1. Illegal, none.	Total... 1	| Legal... 1. Illegal... 8.	Total... 9	
1917.		<i>Liquors.</i>		1918.	
Legal...29.	Illegal... 4.	Total... 33	| Legal...66. Illegal... 5.	Total...71	
1917.		<i>Meats.</i>		1918.	
Legal... 2.	Illegal...12.	Total...14	| Legal... 5. Illegal... 9.	Total...14	
1917.		<i>Milk.</i>		1918.	
Legal... 4.	Illegal, none.	Total...4	| Legal...19. Illegal... 1.	Total...20	
1917.		<i>Milk, Condensed.</i>		1918.	
Legal... 14.	Illegal...39.	Total...53	| Legal... 3. Illegal... 3.	Total... 6	
1917.		<i>Milk, Malted.</i>		1918.	
Legal... 3.	Illegal... 1.	Total... 4	|	None.	
1917.		<i>Nuts.</i>		1918.	
Legal... 1.	Illegal...21.	Total...22	| Legal...11. Illegal...16.	Total...27	
1917.		<i>Nut Compounds.</i>		1918.	
Legal... 1.	Illegal, none.	Total... 1	| Legal... 1. Illegal... 1.	Total... 2	
1917.		<i>Oils, Edible.</i>		1918.	
Legal... 4.	Illegal... 1.	Total... 5	| Legal... 7. Illegal, none.	Total... 7	
1917.		<i>Olives.</i>		1918.	
Legal... 2.	Illegal, none.	Total... 2	| Legal... 3. Illegal, none.	Total... 3	
1917.		<i>Pastes, Alimentary.</i>		1918.	
Legal... 6.	Illegal, none.	Total... 6	|	None.	
1917.		<i>Pastry.</i>		1918.	
None.		|	Legal... 1. Illegal... 2.	Total... 3	
1917.		<i>Rice.</i>		1918.	
Legal... 4.	Illegal, none.	Total... 4	|	None.	
1917.		<i>Salt.</i>		1918.	
None.		|	Legal... 2. Illegal... 1.	Total... 3	
1917.		<i>Spice.</i>		1918.	
Legal... 6.	Illegal... 2.	Total... 8	| Legal...10. Illegal... 2.	Total...12	
1917.		<i>Sugar.</i>		1918.	
Legal... 1.	Illegal, none.	Total... 1	| Legal... 2. Illegal, none.	Total... 2	
1917.		<i>Sugar, Maple.</i>		1918.	
None.		|	Legal... 3. Illegal, none.	Total... 3	
1917.		<i>Syrup, Fountain.</i>		1918.	
None.		|	Legal... 1. Illegal... 2.	Total... 3	
1917.		<i>Syrup, Table.</i>		1918.	
Legal...2.	Illegal, none.	Total... 2	| Legal... 5. Illegal... 1.	Total... 6	
1917.		<i>Vegetables.</i>		1918.	
Legal...19.	Illegal...21.	Total...40	| Legal...64. Illegal...124.	Total...188	
1917.		<i>Vegetable Compounds.</i>		1918.	
Legal, none.	Illegal... 2.	Total... 2	| Legal... 2. Illegal... 2.	Total... 4	
1917.		<i>Vinegar.</i>		1918.	
Legal... 3.	Illegal... 4.	Total... 7	| Legal... 1. Illegal... 2.	Total... 3	
1917.		<i>Veg-Paraf.</i>		1918.	
Legal... 1.	Illegal, none.	Total... 1	|	None.	

The majority of the unofficial food samples consisted of tomato products, egg substitutes, canned fish, gelatine, nuts and nut meats, and condiments. In general, the comments applied to the official samples of these materials apply to the unofficial samples.

UNOFFICIAL SAMPLES—MISCELLANEOUS PRODUCTS.

For the Fiscal Years Ending June 30, 1917, and June 30, 1918.

1917.	<i>Apricot Pits.</i>			1918.
None.	|	Legal... 1.	Illegal, none.	Total... 1
1917.	<i>Colors.</i>			1918.
Legal... 1.	Illegal... 1.	Total... 2	|	none
1917.	<i>Dextri-Maltose.</i>			1918.
None.	|	Legal... 1.	Illegal, none.	Total... 1
1917.	<i>Oil, Lubricating.</i>			1918.
None.	|	Legal... 1.	Illegal, none.	Total... 1
1917.	<i>Preservatives.</i>			1918.
Legal... 2.	Illegal, none.	Total... 2	| Legal... 1. Illegal... 1.	Total... 2
1917.	<i>Tobacco—Cigarettes.</i>			1918.
Legal... 2.	Illegal, none.	Total... 2	|	None.
1917.	<i>Waste.</i>			1918.
None.	|	Legal... 1.	Illegal, none.	Total... 1
1917.	<i>Water, Potable.</i>			1918.
Legal... 1.	Illegal, none.	Total... 1	| Legal... 12.	Illegal, none. Total... 12
1917.	<i>Wool.</i>			1918.
Legal... 1.	Illegal, none.	Total... 1	|	None.

COLD STORAGE SAMPLES.

For the Fiscal Years Ending June 30, 1917, and June 30, 1918.

1917.	<i>Butter.</i>			1918.
Legal... 4.	Illegal, none.	Total... 4	|	None.
1917.	<i>Cheese.</i>			1918.
Legal... 2.	Illegal, none.	Total... 2	| Legal... 1.	Illegal, none. Total... 1
1917.	<i>Condiments.</i>			1918.
Legal... 1.	Illegal, none.	Total... 1	|	None.
1917.	<i>Eggs.</i>			1918.
Legal, none.	Illegal... 38.	Total... 38	| Legal... 1.	Illegal... 1. Total... 2
1917.	<i>Fish.</i>			1918.
Legal... 5.	Illegal... 4.	Total... 10	| Legal, none.	Illegal... 1. Total... 2
1917.	<i>Flour.</i>			1918.
Legal... 3.	Illegal, none.	Total... 3	|	None.
1917.	<i>Fruit.</i>			1918.
Legal... 7.	Illegal, none.	Total... 7	| Legal... 1.	Illegal, none. Total... 1
1917.	<i>Meat.</i>			1918.
Legal... 1.	Illegal... 6.	Total... 7	|	None.
1917.	<i>Milk.</i>			1918.
Legal... 1.	Illegal... 1.	Total... 2	|	None.
1917.	<i>Nuts.</i>			1918.
Legal, none.	Illegal... 4.	Total... 4	| Legal... 14.	Illegal, none. Total... 14
1917.	<i>Peppers.</i>			1918.
None.	|	Legal... 1.	Illegal, none.	Total... 1
1917.	<i>Poultry.</i>			1918.
Legal... 1.	Illegal... 4.	Total... 5	|	None.
1917.	<i>Vegetables.</i>			1918.
Legal, none.	Illegal... 1.	Total... 1	|	None.

OFFICIAL SAMPLES—DRUGS.

For the Fiscal Years Ending June 30, 1917, and June 30, 1918.

1917.	<i>Acids and Acid Compounds.</i>		1918.
Legal... 3. Illegal... 6. Total... 9	|	Legal... 3. Illegal... 1. Total... 4	
The illegal samples were Acid Aceto-Salicylic 5-grain tablets, in which other materials had been substituted wholly or in part for acid aceto-salicylic.			
1917.	<i>Aconite, Tr.</i>		1918.
Legal... 5. Illegal, none. Total... 5	|	None.	
1917.	<i>Alcohol.</i>		1918.
Legal, none. Illegal... 11. Total... 11	|	Legal... 2. Illegal... 3. Total... 5	
The illegal samples were below the required strength.			
1917.	<i>Aspirin (Acid Aceto-Salicylic)</i>		1918.
Legal... 4. Illegal... 8. Total... 12	|	None.	
The illegal samples consisted wholly or in part of starch, milk sugar and tartaric acid which had been substituted for aspirin.			
1917.	<i>Asthma Remedy.</i>		1918.
Legal, none. Illegal... 1. Total... 1	|	None.	
The label on this sample contained false claims.			
1917.	<i>Blackberry Cordial.</i>		1918.
None.	|	Legal... 1. Illegal... 1. Total... 2	
The illegal sample consisted of an imitation product.			
1917.	<i>Blackberry Balsam.</i>		1918.
Legal, none. Illegal... 1. Total... 1	|	None.	
The label on this sample contained fraudulent claims.			
1917.	<i>Belladonna, Tr.</i>		1918.
None.	|	Legal... 3. Illegal, none. Total... 3	
1917.	<i>Camphor Compounds.</i>		1918.
Legal... 18. Illegal... 18. Total... 36	|	Legal... 15. Illegal... 5. Total... 20	
The illegal samples consisted largely of camphorated oils, deficient in camphor.			
1917.	<i>Capsicum.</i>		1918.
Legal... 1. Illegal... 1. Total... 2	|	Legal... 1. Illegal, none. Total... 1	
The illegal sample did not conform to the standard of purity.			
1917.	<i>Cascara, Fl. Ext.</i>		1918.
None.	|	Legal, none. Illegal... 2. Total... 2	
The illegal samples contained more than 13 per cent of alcohol not declared on the label.			
1917.	<i>Celery Compounds.</i>		1918.
Legal... 1. Illegal, none. Total... 1	|	None.	
1917.	<i>Cod Liver Oil.</i>		1918.
Legal... 1. Illegal, none. Total... 1	|	None.	
1917.	<i>Colic Cure.</i>		1918.
Legal... 1. Illegal, none. Total... 1	|	None.	
1917.	<i>Corn Remedies.</i>		1918.
Legal, none. Illegal... 1. Total... 1	|	Legal... 1. Illegal, none. Total... 1	
The label on the illegal sample contained false claims.			
1917.	<i>Cough Cures.</i>		1918.
Legal, none. Illegal... 1. Total... 1	|	None.	
The label on this sample contained fraudulent statements.			
1917.	<i>Cubeb Berries, Po.</i>		1918.
None.	|	Legal, none. Illegal... 1. Total... 1	
This sample did not conform to the standard of purity.			

1917.	<i>Digitalis, Tr.</i>	1918.
Legal---17. Illegal, none. Total---17	|	None.
1917.	<i>Flaxseed Meal.</i>	1918.
Legal--- 1. Illegal, none. Total--- 1	|	None.
1917.	<i>Gins.</i>	1918.
Legal--- 1. Illegal--- 3. Total--- 4	|	None.
The labels of the illegal samples contained false statements as to the therapeutic properties of these gins.		
1917.	<i>Ginger Compounds.</i>	1918.
Legal_ 2. Illegal--- 1. Total--- 3	|	None.
The statement on the label of the illegal sample was false and misleading as to therapeutic properties.		
1917.	<i>Grippe and Cold Cure.</i>	1918.
None.	| Legal, none. Illegal--- 1. Total--- 1	
The label of this sample contained fraudulent and exaggerated statements.		
1917.	<i>Hair Tonics.</i>	1918.
Legal, none. Illegal--- 3. Total--- 3	| Legal, none. Illegal---10. Total---10	
The labels of the illegal samples contained false statements as to the merits of the articles.		
1917.	<i>Headache Remedies.</i>	1918.
None.	| Legal, none. Illegal--- 1. Total--- 1	
This article contained habit-forming drugs which were not declared on the label.		
1917.	<i>Hyoscyamus, Tr.</i>	1918.
Legal--- 9. Illegal, none. Total--- 9	|	None.
1917.	<i>Iodine, Tr.</i>	1918.
Legal---26. Illegal--- 8. Total---34	| Legal---11. Illegal--- 8 Total---19	
The illegal samples of iodine were below standard.		
1917.	<i>Iron, Tr.</i>	1918.
Legal, none. Illegal--- 1. Total--- 1	|	None.
The illegal sample was materially deficient in strength.		
1917.	<i>Kidney Remedy.</i>	1918.
Legal, none. Illegal--- 1. Total--- 1	|	None.
This remedy did not possess the therapeutic properties claimed on the label.		
1917.	<i>Lintiment.</i>	1918.
Legal, none. Illegal--- 1. Total--- 1	|	None.
The claims on the label of this liniment were both false and fraudulent.		
1917.	<i>Lysol.</i>	1918.
Legal--- 2. Illegal, none. Total--- 2	|	None.
1917.	<i>Magnesia, Citrate.</i>	1918.
Legal--- 2. Illegal--- 2. Total--- 4	| Legal--- 1. Illegal, none. Total--- 1	
The illegal samples were materially below the U. S. P. standard.		
1917.	<i>Miscellaneous.</i>	1918.
Legal, none. Illegal--- 4. Total--- 4	| Legal--- 1. Illegal--- 3. Total--- 4	
1917.	<i>Nitre, Sweet Spirits.</i>	1918.
Legal--- 1. Illegal--- 1. Total--- 2	| Legal--- 6. Illegal--- 2. Total--- 8	
The illegal samples were below standard.		
1917.	<i>Nux Vomica, Tr.</i>	1918.
Legal--- 1. Illegal, none. Total--- 1	|	None.

1917.	Oils.	1918.
Legal--- 1. Illegal---18. Total---19	|	None.
Eight of the illegal samples were sweet oil, containing cottonseed oil; two so-called sandalwood oils consisted principally of substitute materials; three samples of oil of bergamot were imitation products; three were oils for external use, the labels of which contained fraudulent claims as to therapeutic properties; one sample of castor oil contained saccharin, and one sweet almond oil was an imitation product.		
1917.	Ointment.	1918.
None.	| Legal, none. Illegal--- 1.	Total--- 1
This was a sample of blue ointment which did not conform to U. S. P. standard.		
1917.	Paregoric.	1918.
None.	| Legal--- 1. Illegal--- 1.	Total--- 2
The illegal sample did not conform to standard.		
1917.	Peppermint Compounds.	1918.
Legal--- 4. Illegal, none. Total--- 4	| Legal--- 1. Illegal--- 1.	Total--- 2
The illegal sample was deficient in peppermint oil.		
1917.	Petrolive.	1918.
None.	| Legal--- 1. Illegal, none.	Total--- 1
1917.	Phenacetin.	1918.
Legal--- 1. Illegal, none. Total--- 1	|	None.
1917.	Pills.	1918.
Legal--- 1. Illegal, none. Total--- 1	|	None.
1917.	Port Wine, Tonic.	1918.
Legal, none. Illegal--- .3. Total--- 3	|	None.
The illegal samples contained alcohol not declared on the labels; and false statements were made on the labels as to the therapeutic properties of the wines.		
1917.	Quinine.	1918.
Legal--- 1. Illegal, none. Total--- 1	|	None.
1917.	Rheumatism Remedies.	1918.
Legal, none. Illegal--- 1. Total--- 1	| Legal--- 1. Illegal--- 1.	Total--- 2
The two illegal samples bore labels containing false and fraudulent statements.		
1917.	Saccharine.	1918.
None.	| Legal, none. Illegal--- 1.	Total--- 1
This sample of saccharine was below standard in strength and purity, and was mislabeled in that it was sold under the name of another article.		
1917.	Salve.	1918.
Legal, none. Illegal--- 1. Total--- 1	|	None.
The label of this sample contained the statement: "This drug will heal anything," but as a matter of fact the salve contained no therapeutic properties whatever.		
1917.	Srophanthus, Tr. U. S. P.	1918.
Legal--- 5. Illegal none. Total--- 5	|	None.
1917.	Tooth Pastes and Remedies—Pyorrhea Remedies.	1918.
Legal--- 1. Illegal--- 1. Total--- 2	| Legal, none. Illegal--- 1.	Total--- 1
The two illegal samples were so-called pyorrhea remedies, the labels containing false claims as to their merits.		
1917.	Trional Tablets.	1918.
Legal--- 1. Illegal, none. Total--- 1	|	None.
1917.	Veronal Tablets.	1918.
Legal, none. Illegal--- 2. Total--- 2	| Legal, none. Illegal--- 1.	Total--- 1
The three illegal samples consisted principally of starch and milk sugar.		

1917.	<i>Waters, Mineral.</i>	1918.
Legal--- 1. Illegal--- 4. Total--- 5 |		None.
The labels of the illegal samples contained false statements as to their therapeutic properties.		
1917.	<i>Waters, Toilet.</i>	1918.
None.	| Legal--- 1. Illegal, none.	Total--- 1
1917.	<i>Witch Hazel.</i>	1918.
Legal--- 2. Illegal, none. Total--- 2 |	Legal--- 1. Illegal, none.	Total--- 1

UNOFFICIAL SAMPLES—DRUGS.

For the Fiscal Years Ending June 30, 1917, and June 30, 1918.

<i>Acid and Acid Tablets.</i>		
Legal, none. Illegal--- 2. Total--- 2 |		None.
1917	<i>Bay Rum.</i>	1918.
None.	| Legal--- 1. Illegal, none.	Total--- 1
1917.	<i>Catarrh Cure.</i>	1918.
None.	| Legal, none. Illegal--- 1.	Total--- 1
1917.	<i>Court Plaster.</i>	1918.
None.	| Legal, none. Illegal--- 1.	Total--- 1
1917.	<i>Cubeb Berries, Po.</i>	1918.
None.	| Legal, none. Illegal--- 1.	Total--- 1
1917.	<i>Gin.</i>	1918.
Legal, none. Illegal--- 1. Total--- 1 |		None.
1917.	<i>Hair Tonic.</i>	1918.
None.	| Legal, none. Illegal--- 2.	Total--- 2
1917.	<i>Iodine, Tr.</i>	1918.
None.	| Legal--- 2. Illegal, none.	Total--- 2
1917.	<i>Miscellaneous.</i>	1918.
Legal, none. Illegal--- 2. Total--- 2 |	Legal--- 1. Illegal, none.	Total--- 1
1917.	<i>Saccharine.</i>	1918.
None.	| Legal--- 1. Illegal, none.	Total--- 1
1917.	<i>Veronal Tablets.</i>	1918.
Legal--- 5. Illegal, none. Total--- 5 |		None.
1917.	<i>Waters, Mineral.</i>	1918.
Legal--- 3. Illegal--- 1. Total--- 4 |		None.

The comments applying to the official samples of these materials also apply to the unofficial samples.

STATE INSTITUTION SAMPLES—FOODS AND OTHER SUPPLIES.

For the Fiscal Years Ending June 30, 1917, and June 30, 1918.

The Bureau of Foods and Drugs co-operates with the State Purchasing Department by examining the contract samples of foods and other materials, which are to be furnished to State Institutions, previous to awarding the contracts. Prior to the inauguration of this system, dealers frequently submitted an excellent sample of goods with their bid, but supplied vastly inferior goods in their deliveries. Under the present system, detailed specifications are required, and in most instances, the submission of samples with the bids. When the deliveries are made, samples are delivered to the Bureau of Foods and Drugs for analysis and examination, in order to compare such deliveries with the original bid samples.

In this manner, a high quality of foods has been maintained for the institutions, and this system has also assisted in getting the proper value for the money expended.

During the fiscal year ending June 30, 1917, 1,231 samples were analyzed and examined for the State Board of Control for state institutions; 201 of these samples did not conform to specifications.

During the fiscal year ending June 30, 1918, 517 samples were analyzed or examined, 113 failing to conform to specifications.

The samples analyzed during these two fiscal years are as follows:

STATE INSTITUTION SAMPLES.

Year Ending June 30, 1917.

Acetic Acid—Two of the five samples examined were rejected on account of being deficient in strength.

Ammonia—One of the six samples examined was found deficient in strength.

Baking Powder—Five of the twenty-three samples analyzed were deficient in strength.

Baking Powder Substitutes—Two samples were analyzed and passed.

Baking Soda—Ten samples were analyzed and found pure.

Blankets—Five samples examined and passed.

Bluing—Nine samples were examined, none of which conformed to specifications.

Borax—One sample analyzed and passed.

Butter—Ten samples were analyzed and passed.

Calcium Acid Phosphate—One sample was analyzed and passed.

Capsicum—One sample analyzed and passed.

Caustic Soda—One sample analyzed and passed.

Cereals—Seventy-seven samples were analyzed; two were rejected.

Cheese—Two of the eleven samples analyzed were rejected as not conforming to specifications.

Chloride of Lime—One sample analyzed and passed.

Chocolate and Cocoa—Six of the twenty-two samples analyzed were rejected as not conforming to specifications.

Cocoanut—One sample analyzed and passed.

Coffee—Six of the sixty-nine samples rejected did not conform to specifications.

Coffee Substitutes—One of twelve samples examined was rejected as an inferior product.

Condiments—Twenty samples were analyzed; one was rejected on account of excessive bacteria and mold.

Cream of Tartar Substitute—Three samples were analyzed and passed.

Cutlery—Ten samples were examined and passed.

Disinfectants—One of the nine samples examined was rejected as not conforming to specifications.

Eggs—One sample was analyzed and found to be weak and stale; rejected.

Extracts—Thirteen samples were analyzed and passed.

Feed—Three of the thirty-seven samples analyzed were rejected.

Fire Extinguisher Fluid—One sample examined and passed.

Fish, Canned—Three of the twenty-five samples examined did not conform to specifications.

Flour—Eighteen of the eighty-two samples examined did not conform to specifications.

Fruit—Ninety-five samples were analyzed; nineteen rejected.

Gelatine—Two of the five samples analyzed did not conform to specifications.

Hair, Curled—One sample examined and passed.

Honey—Three samples examined and passed.

Ink—Five samples analyzed and passed.

Leather—Five of the thirteen samples examined were deficient in quality.

Linotype Metal—One sample examined and passed.

Lye—Four samples analyzed and passed.

Matches—One of the three samples tested did not conform to specifications.

Meats—Three samples were examined; two rejected as not conforming to specifications.

Oils, Edible—One of the ten samples analyzed did not conform to specifications and was rejected.

Oils, Mineral and Lubricating—Six samples were analyzed and passed.

Pastes, Alimentary—Twenty-three samples were examined; one was found to be under weight and was rejected.

Powder from Steam Boiler—One sample examined,

Rice—Nineteen samples examined and passed.

Salt—Eleven samples analyzed and passed.

Shoe Polish—Two of the four samples examined were inferior products and were rejected.

Soap Powders and Cleansers—Four of the thirty-eight samples examined did not meet the specifications.

Soap Chips, Laundry and Toilet Soap, Liquid Soap—One hundred and five samples were analyzed; thirty-four of these contained excessive water, or excessive filler, or both.

Spices—Thirty of the one hundred and ten samples analyzed were inferior in quality and were rejected.

Starch, Corn—Two samples were analyzed and passed.

Starch, Laundry—Six samples were analyzed and passed.

Sugar—Twenty-three samples were analyzed and passed.

Syrup—Thirty-eight samples were analyzed and passed.

Tallow—None of the seven samples analyzed conformed to specifications.

Tapoca—Ten samples were examined and passed.

Tea—One of the thirty-eight samples examined was inferior in quality and was rejected.

Tobacco—Fifteen of the fifty-four samples examined did not conform to specifications.

Turpentine—Three samples were analyzed and passed.

Vegetables, Canned—Fourteen of the eighty samples analyzed did not conform to specifications.

Vinegar—Twenty-two samples were analyzed; two were rejected because of adulteration.

STATE INSTITUTION SAMPLES.

Year Ending June 30, 1918.

Baking Powder—Six samples were analyzed; one was found to be deficient in strength and was rejected.

Baking Soda—Three samples were analyzed and passed.

Blankets—One sample was examined and passed.

Borax—One sample was examined and passed.

Butter—Forty-five samples were examined; twenty-four were found to be inferior in quality.

Calcium Acid Phosphate—One sample analyzed and passed.

Cereals—Twelve samples were analyzed; one was rejected as not conforming to specifications.

Cheese—Three of the eight samples examined did not conform to specifications.

Chocolate—One of the six samples analyzed was inferior in quality.

Coffee—Four of the forty-three samples examined did not meet the specifications.

Condiments—Seventeen samples were examined; one contained excessive bacteria and was rejected.

Crackers—One of the three samples examined did not conform to specifications.

Cream of Tartar—Two of the three samples analyzed were inferior products and were rejected.

Cream of Tartar Substitute—One of the five samples analyzed was rejected as not conforming to specifications.

Extracts—Two of the thirteen samples analyzed were deficient in strength and were rejected.

Feed—Three of the twenty-three samples analyzed did not conform to specifications and were rejected.

Fish, Canned—Two of the five samples analyzed did not meet the specifications.

Flour—Six of the thirty-five samples analyzed were below the requirements.

Fruit—Two of the twenty-one samples examined did not conform to specifications.

Gelatine—Three samples were analyzed and passed.

Hair Dye—Two samples were analyzed and found to contain injurious ingredients.

Jelly—Three samples were analyzed and passed.

Lard—Two samples were analyzed and passed.

Lard Compound—One of the four samples analyzed did not meet the specifications.

Linotype Metal—One sample was examined and passed.

Lye—Three samples were examined and passed.

Matches—One sample was examined and found not to conform to specifications.

Meat—Five samples were analyzed; one sample of Frankfurters was found to contain excessive cereal and was rejected.

Milk—One sample was analyzed and passed.

Oils, Edible—One of the five samples analyzed did not conform to specifications.

Oils, Lubricating—Two samples were analyzed and passed.

Pastes, Alimentary—Eleven samples were analyzed; three did not conform to the specifications and were rejected.

Soap—Seven of the thirty-four samples analyzed contained excessive water, excessive filler, or both.

Spices—Sixteen of the eighty samples analyzed were inferior in quality and were rejected.

Starch, Laundry—Four samples analyzed and passed.

Sugar—Three samples analyzed and passed.

Syrup—Fourteen samples were analyzed and passed.

Tallow—One sample was analyzed and passed.

Tea—Thirty-three samples were examined; fourteen were rejected as not conforming to specifications.

Tobacco—Two samples were examined and passed.

Turpentine—One sample was analyzed and passed.

Varnish—One sample was analyzed and passed.

Vegetables—Two of the eleven samples analyzed did not meet the specifications.

Vinegar—Twenty-one samples were analyzed and passed.

MATERIAL CONDEMNED AND DESTROYED.

Year Ending June 30, 1917.

Acid, aceto salicylic.....	14 oz.	Groceries, miscel.....	1,168 lbs.
Almonds.....	445 lbs.	Ham, pressed.....	17 lbs.
Anchovies.....	30 tins	Herrings.....	120 lbs.
Aspirin.....	300 tabs.	Hominy.....	2,283 lbs.
Baking powder.....	528 lbs.	Ice cream.....	1 gal.
Barley, pearl.....	10 lbs.	Jelly.....	37 lbs.
Beans, dried.....	621 lbs.	Liquor.....	22½ gals.
Beef cheeks.....	165 lbs.	Mackerel.....	2 cans
Beef, concentrated.....	1 pint	Meats.....	80 lbs.
Beef, corned.....	121 lbs.	Medicine.....	234 bots.
Beef extract.....	5 boxes	Milk, evaporated.....	24,284 lbs.
Bloaters.....	50 lbs.	Mince meat.....	312 lbs.
Bread.....	250 loaves	Molasses.....	75 lbs.
Butter.....	418 lbs.	Mustard, ground.....	2 lbs.
Cakes.....	29 lbs.	Olives.....	23 lbs.
Canned goods misc.....	6,485 lbs.	Olive oil.....	10 lbs.
Cereals.....	3,758 lbs.	Oranges.....	1½ boxes
Cheese.....	301 lbs.	Oysters.....	2 cans
Chicken.....	36 lbs.	Pastry filler.....	30 lbs.
Clams.....	2 cans	Peanuts.....	153 lbs.
Clam chowder.....	5 qts.	Pears, dried.....	50 lbs.
Cocoonut shreds.....	300 lbs.	Pickles.....	600 lbs.
Cod.....	50 lbs.	Prunes, dried.....	50 lbs.
Codfish, dried.....	60 lbs.	Poultry.....	2 only
Coffee.....	3,150 lbs.	Raisins, seeded.....	26 lbs.
Condiments.....	3,739 lbs.	Rice.....	200 lbs.
Confectionery.....	250 lbs.	Roll mops, Thelma brand	218 lbs.
Cranberries.....	6 lbs.	Salmon.....	450 lbs.
Currants.....	45 lbs.	Sardines.....	1,041 cans
Drugs, miscellaneous.....	39 pkgs.	Sauerkraut.....	100 qts.
Eggs, incubator.....	12 doz.	Sausage.....	24 lbs.
Eggs, frozen.....	1,200 lbs.	Shrimps.....	34 lbs.
Extracts.....	9 bots.	Snails, bakers'.....	250
Figs, dried.....	15 lbs.	Strawberries.....	8 cans
Filbert nut meats.....	500 lbs.	Syrup.....	9 lbs.
Fish, canned.....	39 cans	Tomatoes and tomato	
Flour.....	2,100 lbs.	products.....	158,856 lbs.
Gelatine.....	1,065 lbs.	Vegetables, canned.....	43 lbs.
Grapes, dried.....	44 lbs.	Veronal.....	83 tabs.
Grape juice nectar.....	6 bots.	Walnuts.....	9,745 lbs.

COLD STORAGE GOODS CONDEMNED AND DESTROYED.

Year Ending June 30, 1917.

Beef tenders.....	50 lbs.	Meat scraps.....	2,235 lbs.
Butter.....	24 lbs.	Pheasants.....	880 lbs.
Chile peppers.....	4,720 lbs.	Pork.....	620 lbs.
Egg meats.....	35 lbs.	Poultry.....	1,975 lbs.
Lamb tongues.....	2 cases	Rabbits.....	330 lbs.
Lamb saddles.....	60 lbs.	Sweetbreads.....	50 lbs.
Liver.....	100 lbs.	Veal.....	120 lbs.
Lobsters.....	300 lbs.	Walnut meats.....	977 lbs.

FOODS AND DRUGS CONDEMNED AND DESTROYED.

Year Ending June 30, 1918.

Almonds.....	25 lbs.	Livers.....	25 lbs.
Anchovies.....	311 cans	Meats:	
Apple butter.....	24 lbs.	Bacon.....	19 jars
Beans, dried.....	27,300 lbs.	Beef, fresh.....	500 lbs.
Bitters, Marshall's.....	2 bots.	Beef, corned.....	1 can
Brains.....	490 lbs.	Beef, dried.....	1 can
Buckwheat flour.....	800 lbs.	Lambs' tongue.....	2 jars
Butter.....	36 lbs.	Sausage.....	25 lbs.
Candy.....	175 lbs.	Meat paste (4-oz.).....	120 cans
Canned goods, miscel.....	16 lbs.	Milk, evaporated.....	2,651 lbs.
Cheese.....	2,614 lbs.	Nitre, sweet spirits of.....	5 lbs.
Chile.....	25 lbs.	Oil, salad.....	118 bots.
Chocolate.....	10½ lbs.	Oil, olive.....	½ gal.
Cocoanut shreds.....	5 lbs.	Olives.....	14,745 lbs.
Coffee.....	4 gals.	Onions, dried.....	80 lbs.
Condiments.....	3,640 lbs.	Pastry filler.....	45 lbs.
Crackers.....	50 lbs.	Peanuts.....	85 lbs.
Crabs.....	500 lbs.	Pigeons.....	10 lbs.
Cumin seed.....	4 lbs.	Poppy seed.....	3½ lbs.
Currants, dried.....	52 lbs.	Potatoes.....	11,900 lbs.
Digitalis herb.....	1 lb.	Poultry.....	50 lbs.
Eggs.....	20½ doz.	Preserves.....	6 jars
Egg substitutes.....	40 lbs.	Rock cod.....	2,250 lbs.
Fish, canned, smoked.....	1,942 lbs.	Sirup.....	1 gal.
Frogs.....	75 lbs.	Sole.....	50 lbs.
Fruits, canned.....	12 pts.	Soup.....	1 can
Fruits, dried.....	112,878 lbs.	Squabs.....	500 cans
Fruit, fresh.....	10 lbs.	Tomatoes, fresh.....	78,740 lbs.
Gelatine.....	3,190 lbs.	Tomato puree.....	390,211 lbs.
Haddies.....	25 lbs.	Tomatoes, canned.....	1,056 No. 10s
Ham.....	20 lbs.	Tomato pulp.....	205 gals.
Herrings.....	284 lbs.	Tomato paste.....	256 lbs.
Hominy.....	2 lbs.	Vegetables, canned, misc.....	10 lbs.
Jel-Easy.....	2 pkgs.	Vegetable compound.....	
Kidneys.....	150 lbs.	(Antipasto-Sport).....	3,280 cans
Kream Krisp.....	2 lbs.	Vinegar.....	414 gals.
Lobsters.....	8,000 lbs.	Walnut meats.....	4,244 lbs.

COLD STORAGE GOODS CONDEMNED AND DESTROYED.

Year Ending June 30, 1918.

Clams.....	400 lbs.	Olives.....	175 lbs.
Fish roe.....	20 lbs.	Rabbits.....	150 lbs.
Frogs.....	10 lbs.	Trout.....	200 lbs.
Herrings, salt.....	2,850 lbs.	Walnut meats.....	500 lbs.

MATERIALS IN COLD STORAGE.

During the Year July 1, 1916, to June 30, 1917.

Quarter Ending September 30, 1916.

Beer.....	207 ½-bbls.	Horseradish.....	43,070 lbs.
Do.....	112 bbls.	Fruit:	
Bulbs.....	2,250 lbs.	Apples.....	173,182 lbs.
Butter.....	1,039,700 lbs.	Do.....	17 bbls.
Do.....	2,355 boxes	Crabapples.....	213 boxes
Candy.....	4,100 lbs.	Currants.....	1 box
Cheese.....	2,246 cases	Figs.....	120 lbs.
Do.....	1,632,358 lbs.	Grapefruit.....	55 boxes
Cider.....	5 bbls.	Grapes.....	687 boxes
Eggs.....	57,475 cases	Peaches.....	1,840 boxes
Dried.....	940 cases	Do.....	5,782 lbs.
Frozen.....	16,395 lbs.	Pears.....	1,335 boxes
Fish:		Do.....	37,222 lbs.
Bloaters.....	114,930 lbs.	Persimmons.....	18 boxes
Dried.....	115,824 lbs.	Strawberries.....	5 bbls.
Frozen.....	76,168 lbs.	Do.....	36 pkgs.
Miscellaneous.....	8,130 lbs.	Miscellaneous—Dried.....	552 boxes
Haddies.....	71,430 lbs.	Miscellaneous—Dried.....	56,748 lbs.
Pickarel.....	43,070 lbs.	Frozen.....	48,480 lbs.
Shellfish.....	36,680 lbs.	Canned.....	200 lbs.

MATERIALS IN COLD STORAGE—(Continued).

During the Year July 1, 1916, to June 30, 1917.

Fruit syrup.....	4 bbls.	Do.....	57 sacks
Lard.....	500 lbs.	Plants and plant leaves.....	1,305 lbs.
Meat:		Popcorn.....	16 sacks
Bacon.....	267 lbs.	Poultry.....	127 pkgs.
Beef.....	52 $\frac{1}{2}$ s	Do.....	287,547 lbs.
Ham.....	166 lbs.	Rabbits.....	9 pkgs.
Livers.....	5 only	Tallow.....	413 lbs.
Miscellaneous.....	549,889 lbs.	Vegetables:	
Do.....	19 pkgs.	Cauliflower.....	9 crates
Pickled.....	84,400 lbs.	Chile, dried.....	61,026 lbs.
Pork loins.....	81 cases	Lettuce.....	18 crates
Sausage.....	27 cases	Mushrooms.....	800 lbs.
Mincemeat.....	440 lbs.	Onions.....	1,968 boxes
Do.....	3 bbls.	Do.....	4,855,025 lbs.
Nuts and nutmeats.....	435,629 lbs.	Peppers.....	2,200 lbs.
Do.....	81 cases	Potatoes.....	4,206 lbs.

Quarter Ending December 31, 1916.

Beer.....	66 $\frac{1}{2}$ -bbls.	Horseradish.....	74 bbls.
Do.....	153 $\frac{1}{2}$ -bbls.	Do.....	48,493 lbs.
Do.....	126 bbls.	Lard.....	555 lbs.
Bulbs.....	6,085 lbs.	Meat:	
Butter.....	407 cases	Bacon.....	237 lbs.
Do.....	529,206 lbs.	Ham.....	109 lbs.
Candy.....	1,800 lbs.	Hams, bellies, pickled.....	44,200 lbs.
Cheese.....	1,028 cases	Miscellaneous meat.....	2,255,903 lbs.
Do.....	1,936,856 lbs.	Do. and poultry.....	1,205,654 lbs.
Eggs.....	679,923 cases	Mutton, frozen.....	11 cases
Frozen.....	25,790 lbs.	Sausage.....	175 lbs.
Egg meats.....	112,880 lbs.	Mincemeat.....	215 lbs.
Fish:		Nuts:	
Bloaters.....	59,610 lbs.	Almonds.....	110 lbs.
Haddle.....	59,220 lbs.	Miscellaneous.....	2,057 lbs.
Miscellaneous.....	32,217 lbs.	Walnuts.....	20 lbs.
Dried.....	112,274 lbs.	Nut meats.....	11 bbls.
Frozen.....	72,668 lbs.	Do.....	31 cases
Pickled.....	287,300 lbs.	Do.....	123,299 lbs.
Smoked.....	2,900 lbs.	Plants and plant leaves.....	1,237 lbs.
Shellfish.....	18,000 lbs.	Poultry.....	979,093 lbs.
Fruit:		Do.....	113 cases
Apples.....	264,552 cases	Do.....	2 bbls.
Do.....	282,569 lbs.	Strawberry syrup.....	1 bbl.
Cranberries.....	200 bbls.	Vegetables:	
Do.....	300 lbs.	Cauliflower.....	7 crates
Do.....	7,532 boxes	Celery.....	11 cases
Grapes.....	313 boxes	Chile, dried.....	9,422 lbs.
Do.....	1,480 lbs.	Lettuce.....	13 crates
Oranges.....	80 boxes	Miscellaneous.....	237 boxes
Do.....	2,062 lbs.	Mushrooms.....	1,735 lbs.
Pears.....	197 boxes	Onions.....	5,987,740 lbs.
Do.....	48,602 lbs.	Peppers.....	21 boxes
Persimmons.....	2,200 lbs.	Do.....	19,200 lbs.
Strawberries.....	2 bbls.	Potatoes.....	4,762 sacks
Miscellaneous.....	8,484,583 lbs.	Do.....	106,851 boxes
Dried.....	50,595 lbs.	Do.....	2,011,518 lbs.
Do.....	42 boxes	Tomatoes.....	60 boxes
Frozen.....	31,080 lbs.		
In glass.....	100 lbs.		

Quarter Ending March 31, 1917.

Beer.....	424 $\frac{1}{2}$ -bbls.	Fish.....	777,259 lbs.
Do.....	37 $\frac{1}{2}$ -bbls.	Fruit:	
Do.....	54 bbls.	Apples.....	4,814,458 lbs.
Do.....	7 pkgs.	Canned.....	12,192 lbs.
Bulbs.....	15,245 lbs.	Dried.....	89,318 lbs.
Butter.....	10,769 lbs.	Fresh.....	2,480,369 lbs.
Cheese.....	864,633 lbs.	Hops.....	50 pkgs.
Eggs:		Horseradish.....	102,500 lbs.
Fresh.....	2,018,009 doz.	Do.....	5 pkgs.
Frozen (meats).....	808,864 lbs.	Lard.....	393 lbs.

MATERIALS IN COLD STORAGE—(Continued).

Quarter Ending March 31, 1917—(Continued).

Meats, miscellaneous	4,162,969 lbs.	Syrup	2,523 lbs.
Nut meats	149,966 lbs.	Vegetables:	
Pickles	3 pkgs.	Miscellaneous	80,639 lbs.
Plants and plant leaves	2,640 lbs.	Onions	96,375 lbs.
Poultry	1,303,638 lbs.	Potatoes	16,343,759 lbs.
Spices	4,313 lbs.		

Quarter Ending June 30, 1917.

Butter	1,576,632 lbs.	Lard	866,329 lbs.
Candy	68,065 lbs.	Lard substitute	9,762 lbs.
Cereals	70,124 lbs.	Meat:	
Cheese	1,374,095 lbs.	Cured	4,825 lbs.
Eggs:		Fresh	4,413,096 lbs.
Canned	10,460 lbs.	Frozen	24,024 lbs.
Fresh	7,786,035 doz.	Pickled	185,700 lbs.
Frozen	144,775 lbs.	Milk	170 lbs.
Fish:		Nuts:	
Dried	192,810 lbs.	Meats	471,237 lbs.
Fresh	759,356 lbs.	In shell	128,480 lbs.
Frozen	85,800 lbs.	Poultry	2,807,986 lbs.
Pickled	246,800 lbs.	Salad oil	5,000 lbs.
Shell	26,500 lbs.	Vegetables:	
Smoked	308,468 lbs.	Onions	107,400 lbs.
Fruit:		Potatoes	766,329 lbs.
Dried	369,836 lbs.	Miscellaneous	211,435 lbs.
Canned	950 lbs.		
Fresh	628,387 lbs.		
Frozen	5,200 lbs.		

During the Year July 1, 1917, to June 30, 1918.

Quarter Ending September 30, 1917.

Beer	6,992 gals.	Peaches	2,546,578 lbs.
Butter	1,635,502 lbs.	Pears	1,231,670 lbs.
Cereals	2,034 lbs.	Plums	69,591 lbs.
Cheese	4,510,244 lbs.	Quinces	214 lbs.
Chocolate	2,500 lbs.	Raspberries	1,500 lbs.
Citron	450 lbs.	Strawberries	144,180 lbs.
Cocconut	10,517 lbs.	Horseradish	52,750 lbs.
Confectionery	66,736 lbs.	Lard	183,986 lbs.
Eggs:		Lard substitute	3,799 lbs.
Canned	3,784 lbs.	Meat (miscellaneous)	3,062,741 lbs.
Cold stored	5,304,481 doz.	Minced meat	11,478 lbs.
Egg meats	425,500 lbs.	Nuts	146,585 lbs.
Frozen eggs	117,201 lbs.	Nut meats	465,922 lbs.
Fish:		Paprika	1,065 lbs.
Miscellaneous	781,750 lbs.	Peanut oil	1,158 lbs.
Pickled	295,400 lbs.	Peppers, chili	8,715 lbs.
Shellfish	28,200 lbs.	Popcorn	14,164 lbs.
Flour	83,833 lbs.	Poultry	1,652,303 lbs.
Fruit:		Suetene	18,000 lbs.
Apples	3,440,487 lbs.	Sirup	2,387 lbs.
Blackberries	6,000 lbs.	Vegetables:	
Cranberries	26,040 lbs.	Beans	11,095 lbs.
Currants	15,899 lbs.	Celery	100 lbs.
Dried fruit	277,253 lbs.	Lettuce	50 lbs.
Fresh fruit, miscel.	10,048,478 lbs.	Mixed vegetables	150 lbs.
Grapes	144,244 lbs.	Mushrooms	16,610 lbs.
Grapefruit	500 lbs.	Onions	10,603,352 lbs.
Loganberries	50,874 lbs.	Potatoes	81,918 lbs.
Melons	2,520 lbs.	Tomatoes	358 lbs.
Oranges	823,386 lbs.	Turnips	180 lbs.

Quarter Ending December 31, 1917.

Beer	10,531 gals.	Compound	769 lbs.
Butter	604,838 lbs.	Eggs	516,015 doz.
Cereals	225 lbs.	Canned	1,240 lbs.
Cheese	3,373,817 lbs.	Frozen	79,079 lbs.
Cider	50 bbls.	Egg meats	271,776 lbs.
Citron	600 lbs.	Fish	1,517,066 lbs.

MATERIALS IN COLD STORAGE—(Continued).**Quarter Ending December 31, 1917—(Continued).**

Fruit:			Meats, miscellaneous	3,474,581 lbs.
Apples	30,228,018 lbs.		Ham and bacon	850 lbs.
Apricots	632 lbs.		Whale meat	29,999 lbs.
Berries	6,642 lbs.		Minced meat	5,810 lbs.
Cocanut	6,760 lbs.		Nuts	48,725 lbs.
Cranberries	17,600 lbs.		Peanut oil	386 lbs.
Currants	190 lbs.		Popcorn	510 lbs.
Dates	3,318 lbs.		Poultry	929,130 lbs.
Dried fruit	63,394 lbs.		Syrup	306 bbls.
Figs	1,740 lbs.		Sweetbreads	405 lbs.
Grapes	184,798 lbs.		Vegetables:	
Miscellaneous	11,773,923 lbs.		Artichokes	165 lbs.
Oranges and lemons	8,378 lbs.		Beans	5,480 lbs.
Peaches	11,880 lbs.		Beets	70 lbs.
Pears	243,356 lbs.		Cabbage	4,724 lbs.
Persimmons	2,160 lbs.		Carrots	695 lbs.
Plums	124 lbs.		Caullflower	770 lbs.
Quinces	639 lbs.		Celery	29,650 lbs.
Raisins	31,538 lbs.		Lettuce	936 lbs.
Strawberries	49,680 lbs.		Mushrooms	16,800 lbs.
Horseradish	113,450 lbs.		Potatoes, white	1,716,544 lbs.
Kraut	1 bbl.		Potatoes, sweet	13,200 lbs.
Lard	327,838 lbs.		Tomatoes	4,820 lbs.
Lard substitute	1,125 lbs.			

During the Year July 1, 1917, to June 30, 1918.**Quarter Ending March 31, 1918.**

Beer		34,733 gals.	Fruit:	
Bulbs, plants, etc.	27,001 lbs.		Apples	14,794,002 lbs.
Butter	800,588 lbs.		Berries	1,173,049 lbs.
Cheese	1,667,699 lbs.		Dried	146,065 lbs.
Cider	3,906 gals.		Frozen	6,182 lbs.
Condiments:			Miscellaneous	4,937,111 lbs.
Catsup	315,500 lbs.		Pears	37,160 lbs.
Pickles	32,684 lbs.		Oranges	29,200 lbs.
Cooking compound	987 lbs.		Milk, condensed	258,298 lbs.
Eggs:			Nuts	10,204 lbs.
Dried	20 lbs.		Nut meats	219,337 lbs.
Fresh	2,315,728 doz.		Oleomargarine	82,379 lbs.
Frozen	180,950 lbs.		Pol	327 lbs.
Lard	113,947 lbs.		Poultry:	
Meat:			Chickens	310,989 lbs.
Beef	195,280 lbs.		Miscellaneous	790,700 lbs.
Ham and bacon	1,250 lbs.		Turkeys	295,828 lbs.
Miscellaneous	2,419,024 lbs.		Syrup	54 bbls.
Mutton	700 lbs.		Vegetables:	
Pork	618,047 lbs.		Beans	2,220 lbs.
Veal	350 lbs.		Celery	110,000 lbs.
Fish:			Horseradish	108,103 lbs.
Bloaters	117,690 lbs.		Miscellaneous	326,264 lbs.
Dried	180,030 lbs.		Onions	5,368,524 lbs.
Frozen	27,300 lbs.		Potatoes	17,802,819 lbs.
Miscellaneous	139,101 lbs.		Tomatoes	800 lbs.
Pickled	189,625 lbs.		Whale meat	27,266 lbs.
Shell	4,500 lbs.		Wine	25 bbls.
Smoked	132,900 lbs.			

Quarter Ending June 30, 1918.

Beer		2,396 bbls.	Eggs:	
Berry plants, bulbs and leaves	745,838 lbs.		Fresh	8,700,360 doz.
Butter	2,351,932 lbs.		Frozen	342,149 lbs.
Catsup and pickles	88,160 lbs.		Fish:	
Cereals	9,908 lbs.		Cured	808,770 lbs.
Cheese	1,828,442 lbs.		Fresh	309,726 lbs.
Cider	54 lbs.		Frozen	136,600 lbs.
Cider	54 gals.		Shell	13,400 lbs.
Confectionery	37,630 lbs.			

MATERIALS IN COLD STORAGE—(Continued).

During the Year July 1, 1917, to June 30, 1918.

Quarter Ending June 30, 1918—(Continued).

Fruit:		Oils, olive and cottonseed	8,155 lbs.
Apples	12,920 lbs.	Oleomargarine and cook-	
Dried	1,565,428 lbs.	ing compound	90,227 lbs.
Fresh, miscellaneous	230,409 lbs.	Poultry	992,996 lbs.
Ice cream	39 pkgs.	Preserves	22,120 lbs.
Juice, fruit	400,588 lbs.	Sausage casings	5 bbls.
Lady bugs	40 pkgs.	Syrup	16 gals.
Lard	175,862 lbs.	Vegetables:	
Meats:		Miscellaneous	479,399 lbs.
Cured, ham and bacon	422,175 lbs.	Onions	280,488 lbs.
Frozen	16,498 lbs.	Potatoes	9,279,930 lbs.
Minced meat	5,600 lbs.	Sauerkraut	14,690 lbs.
Miscellaneous	1,669,497 lbs.	Seed potatoes	200 lbs.
Milk, condensed	16,844 cases	Whale meat	27,028 lbs.
Nuts and nut meats	683,011 lbs.		

The California Cold Storage Act permits the storage of food products for a period of twelve months. If further time is desired the owners must make application for an extension of this period. The goods are then examined by the State Board of Health, and if found in suitable condition, further extension is granted.

The following goods were found, upon inspection, to be in excellent condition, and for this reason extensions were granted as indicated.

LIST OF EXTENSIONS GRANTED FOR MATERIALS IN COLD STORAGE.

Biennial Period Ending June 30, 1918.

Material	Amount	Locality	Extension granted
Candy	4 bbls.	Los Angeles ...	1 year
Cheese	44,506 lbs.	San Francisco	1 year
Eggs—			
Frozen yolks	21,866 lbs.	San Francisco	1 year
Frozen yolks	12,406 lbs.	Los Angeles	1 year
Frozen whites	7,788 lbs.	San Francisco	1 year
Frozen whites	12,066 lbs.	Los Angeles	1 year
Frozen whites	616 lbs.	Oakland	1 year
Frozen mixed	6,680 lbs.	Los Angeles	1 year
Fish—			
Dry salt	5 tubs	San Francisco	1 year
Bloaters	21,906 lbs.	San Francisco	1 year
Herrings	1,217½ lbs.	San Francisco	1 year
Mackerel	3,562½ lbs.	San Francisco	1 year
Miscellaneous	38,302½ lbs.	San Francisco	1 year
Fruit—			
Figs	4,960 lbs.	San Francisco	1 year
Pulp	700 gals.	Los Angeles	6 months
Pulp, orange	11 bbls.	Los Angeles	1 year
Raisins	6,300 lbs.	Los Angeles	3 months
Meats—			
Ham	13 cases	San Francisco	1 year
Sweetbreads	2,750 lbs.	San Francisco	6 months
Nuts—			
Almonds	24 cases	Los Angeles	1 year
Miscellaneous	12 boxes	Los Angeles	1 year
Pea meal	110 lbs.	Los Angeles	1 year
Poultry—			
Broilers	5,320 lbs.	Oakland	1 year
Squabs	52 doz.	Los Angeles	1 year
Vegetables—			
Chili peppers	66 sacks	Los Angeles	6 months
Horseradish	171 bbls.	Los Angeles	1 year
Mushrooms	13 cases	San Francisco	1 year
Mushrooms	37 boxes	San Francisco	1 year

SUMMARY OF ANALYTICAL WORK.

July 1, 1916, to June 30, 1917.

Foods and Food Products—Official.

Material	Legal samples	Illegal samples	Total samples
Beverages	33	21	54
Bread	10	25	35
Bread improver		1	1
Butter	5	4	9
Cereal	1		1
Cheese	1		1
Chocolate and cocoa	5	8	13
Cocoa substitute	1		1
Cocoanut	1		1
Coffee	5	27	32
Coffee and chicory	1		1
Condiments	78	69	147
Confectionery	27	6	33
Crackers	1		1
Cream	1	2	3
Cream of tartar	2		2
Eggs	12	105	117
Egg substitutes		7	7
Extracts	30	43	73
Feed		2	2
Fish and oysters, canned	34	30	64
Flour	7	4	11
Fruits	4	9	13
Gelatine	7	9	16
Gum scrap		1	1
Honey	2		2
Ice cream	32	10	42
Ice cream powder	2		2
Icing	2		2
Jellies, jams and preserves	9	8	17
Lard	1		1
Liquors	44	256	300
Meats	48	68	111
Milk	62	138	200
Nuts and nut meats	1	13	14
Nut compounds		1	1
Oils, edible	7	5	12
Pastes, alimentary	13	6	19
Pastry	7	11	18
Pork and beans	1	3	4
Ravioli	2		2
Salt	1		1
Soda, bicarbonate		1	1
Soup, canned		1	1
Spices	31	9	40
Syrups, fountain	11	28	39
Syrups, table	4	16	20
Tea		1	1
Vegetables	68	26	94
Vinegar	34	9	43
Waters, mineral	1	1	2
Totals	649	979	1,628

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1916, to June 30, 1917.

Foods and Food Products—Unofficial.

Material	Legal samples	Illegal samples	Total samples
Beverages	7	3	10
Bouillon cubes	1		1
Bread		2	2
Butter		1	1
Cheese	1	1	2
Chocolate		16	16
Ocoanut	1	3	4
Coffee		1	1
Condiments	5	10	21
Confectionery	2		2
Cream	4		4
Eggs	5	1	6
Egg yolk, dried		1	1
Egg substitute		1	1
Dextri-maltose	1		1
Extracts	2	2	4
Fish, canned	11	15	26
Fish, fresh	1	1	1
Flour	17		17
Fruit	12	6	18
Gelatine	8	12	20
Ice cream	2		2
Ice cream filler	3		3
Ice cream powder	2	1	3
Iceine	2		2
Jellies and jams	9	6	15
Jelly powder	1		1
Lard bleacher	1		1
Liquors	29	4	33
Meats	2	12	14
Milk, whole	4		4
Milk, evaporated	15	39	54
Milk, malted	3		3
Milk, powdered		1	1
Nuts	1	21	22
Nut compound	1		1
Oils, edible	4	1	5
Olives	2		2
Pastes, alimentary	6		6
Rice	4		4
Spice	6	2	8
Sugar	1		1
Syrup, table	2		2
Vegetables	19	21	40
Vegetable compounds		2	2
Vinegar	3	4	7
Veg paraf	1		1
Totals	200	196	396

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1916, to June 30, 1917.

Drugs.

Material	Legal samples	Illegal samples	Total samples
Acid compounds and tablets.....	3	6	9
Aconite, tincture of.....	5		5
Alcohol		11	11
Aspirin tablets	4	8	12
Asthma remedy		1	1
Belladonna, tincture of.....	3		3
Blackberry balsam		1	1
Camphor compounds	18	18	36
Capsicum	1	1	2
Celery compound	1	1	2
Cod liver oil.....	1		1
Colic cure	1		1
Corn remedy		1	1
Digitalis, tincture of.....	17		17
Flaxseed meal	1		1
Ginger compounds	1	3	4
Hair tonic		2	2
Hyoseyamus, tincture of.....	9		9
Iodine, tincture of.....	26	8	34
Iron, tincture of.....		1	1
Liniment		2	2
Lysol	2		2
Magnesia, citrate of.....	2	2	4
Miscellaneous remedies		5	5
Nitre compounds		2	2
Nux vomica, tincture of.....	1		1
Oils	1	17	18
Peppermint compounds	4		4
Phenacetin	1		1
Pills	1		1
Port		3	3
Quinine	1		1
Rheumatism cure		1	1
Salve		1	1
Strophanthus, tincture of.....	5		5
Tooth pastes and powders.....		1	1
Veronal	1		1
Waters	1	1	2
Witch hazel	2		2
Totals.....	112	98	210

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1916, to June 30, 1917.

Drugs—Unofficial.

Material	Legal samples	Illegal samples	Total samples
Acid and acid tablets.....		2	2
Oatarrh cure		1	1
Glin		1	1
Liver remedy		1	1
Miscellaneous		1	1
Oils		1	1
Veronal	5		5
Waters	3	1	4
Totals.....	8	8	16

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1916, to June 30, 1917.

Miscellaneous.

Material	Legal samples	Illegal samples	Total samples
Apricot pits	1		1
Colors	1		1
Feed	4		4
Preservatives	2		2
Tobacco—cigarettes	2		2
Wool	1		1
Totals.....	11		11

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1916, to June 30, 1917.

Foods and Food Products.

Cold Storage.

Material	Number not in violation of California Pure Food Act	Number in violation of California Pure Food Act	Total
Butter	4		4
Cheese	2		2
Condiments		1	1
Eggs		38	38
Fish	5	5	10
Flour	3		3
Fruit		7	7
Meat	6	1	7
Milk		1	1
Poultry		4	4
Nuts		4	4
Vegetables	1	1	2
Totals.....	21	62	83

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1916, to June 30, 1917.

Foods and Food Products.

Unofficial.

State Institutions.

Material	Conforming to specifications	Not conforming to specifications	Total
Baking powder	28	5	33
Baking powder substitutes	2		2
Baking soda	10		10
Butter	10		10
Cereals	75	2	77
Cheese	9	2	11
Chocolate and cocoa	16	6	22
Cocoanut	1		1
Coffee	68	6	69
Coffee substitutes	11	1	12
Condiments	19	1	20
Cream of tartar substitute	3		3
Eggs		1	1
Extracts	13		13
Feed	34	3	37
Fish, canned	22	3	25
Flour	64	18	82
Fruit	76	19	95
Gelatine	3	2	5
Honey	3		3
Lard and lard compounds	2		2
Liquors	3		3
Meats	1	2	3
Oils, edible	9	1	10
Pastes, alimentary	22	1	23
Rice	19		19
Salt	11		11
Spices	80	30	110
Starch, corn	2		2
Sugar	23		23
Syrup	38		38
Taploca	10		10
Tea	37	1	38
Vegetables	66	14	80
Vinegar	20	2	22
Totals	805	120	925

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1916, to June 30, 1917.

Foods and Food Products.

Unofficial.

State Institutions.

Material	Conforming to specifications	Not conforming to specifications	Total
Acids	3	2	5
Ammonia	5	1	6
Blankets	5		5
Bluing		9	9
Borax	1		1
Calcium acid phosphate	1		1
Capsicum	1		1
Caustic soda	5		5
Chloride of lime	1		1
Cutlery	10		10
Disinfectants	8	1	9
Fire extinguisher fluid	1		1
Hair, curled	1		1
Ink	5		5
Leather	8	5	13
Linotype metal	1		1
Lye	4		4
Matches	2	1	3
Oil, fuel	1		1
Oil, lubricating	5		5
Petrolatum	1		1
Powder from steam boiler	1		1
Shoe polish	2	2	4
Soap powders and cleansers	34	4	38
Soap chips, laundry, toilet and liquid soap	71	34	105
Starch, laundry	6		6
Tallow		7	7
Tobacco	39	15	54
Turpentine	3		3
Totals	225	81	306

SUMMARY OF ANALYTICAL WORK.

July 1, 1917, to June 30, 1918.

Foods and Food Products.

Official.

Material	Legal samples	Illegal samples	Total samples
Beverages	6	22	28
Bouillon cubes	1	-----	1
Bread	1	6	7
Bread dough	2	-----	2
Butter	6	1	7
Butter fat	-----	1	1
Cereal	-----	1	1
Cheese	3	3	6
Chocolate	2	15	17
Coffee	1	8	9
Coffee mixture	1	1	2
Condiments	44	87	131
Confectionery	8	23	31
Cream	20	5	25
Eggs	8	44	52
Egg albumin	-----	1	1
Egg whites	1	3	4
Egg, dried	11	1	12
Egg substitutes	8	23	31
Extracts	28	24	52
Feed	7	1	8
Fish	24	49	73
Flour	2	2	4
Fruit	10	10	20
Gelatine	1	18	19
Honey	6	3	9
Ice cream	28	8	36
Jellies and jams	12	8	20
Lard	1	-----	1
Lard compounds and substitutes	3	-----	3
Liquors	20	308	328
Meat	30	61	91
Milk, whole	80	43	123
Milk, condensed	6	3	9
Nuts	2	12	14
Nut paste	3	-----	3
Oils, edible	6	4	10
Oleomargarine	1	1	2
Pastes, alimentary	7	20	27
Pastry	6	10	16
Pastry filler	-----	1	1
Poultry	-----	2	2
Salt	4	2	6
Spices	57	19	76
Sugar	-----	1	1
Sugar, maple	3	8	11
Syrup, fountain	6	13	19
Syrup, table	42	62	104
Vegetables	92	110	202
Vegetable compounds	-----	7	7
Vinegar	68	18	86
Water, mineral	15	1	16
Totals	688	1,072	1,760

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1917, to June 30, 1918.

Drugs.

Official.

Material	Legal samples	Illegal samples	Total samples
Acid, aceto salicylic.....	3	1	4
Alcohol	2	3	5
Blackberry cordial		1	1
Camphor compounds	15	5	20
Capsicum	1		1
Cascara, fluid extract.....		2	2
Corn remedy	1	1	2
Cubeb berries, Po.....		2	2
Grippe and cold cure.....		1	1
Hair tonic		11	11
Headache remedy		2	2
Iodine, tincture of.....	12	11	23
Liniment		2	2
Nitre compounds	2	6	8
Oil, sweet	1	1	2
Oil camphorated		1	1
Ointment		1	1
Paregoric	1	1	2
Peppermint, essence of.....	1	1	2
Saccharine		1	1
Syrup wild cherry bark.....		1	1
Tonic	1	2	3
Tooth remedies		1	1
Veronal		1	1
Water		1	1
Wine, port		1	1
Witch hazel	1		1
Totals.....	41	61	102

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1917, to June 30, 1918.

Foods and Food Products.

Unofficial.

Material	Legal samples	Illegal samples	Total samples
Beverages	1	1	2
Bread	14	-----	14
Butter	1	-----	1
Cereal	8	5	8
Cheese	3	-----	3
Cocoonut	-----	2	2
Condiments	25	28	53
Confectionery	4	2	6
Cream	1	-----	1
Egg albumin	1	-----	1
Egg substitutes	8	10	18
Egg whites	-----	2	2
Eggs, dried	1	2	3
Extracts	3	1	4
Feed	2	1	3
Fish, canned	17	38	55
Flour	14	4	18
Fruit	3	8	11
Gelatine	6	10	16
Ice cream	2	-----	2
Jelly	3	1	4
Lard	1	1	2
Lard compounds	-----	7	7
Liquors	66	5	71
Meat	5	9	14
Milk	22	4	26
Nuts	11	16	27
Nut compound	1	1	2
Oils, edible	7	-----	7
Olives	2	1	3
Pastry	1	2	3
Salt	2	1	3
Soup	4	-----	4
Spices	10	2	12
Sugar	2	-----	2
Sugar, maple	3	-----	3
Syrup, fountain	1	2	3
Syrup, table	5	1	6
Vegetables	65	123	188
Vegetable compounds	2	2	4
Vinegar	1	2	3
Totals.....	328	294	617

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1917, to June 30, 1918.

Drugs.

Unofficial.

Material	Legal samples	Illegal samples	Total samples
Bay rum	1	-----	1
Court plaster	-----	1	1
Cubebs Po.	-----	1	1
Hair tonic	-----	2	2
Iodine	2	-----	2
Poison (suspected)	1	-----	1
Saccharine	1	-----	1
Totals.....	5	4	9

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1917, to June 30, 1918.

Miscellaneous.

Unofficial.

Material	Legal samples	Illegal samples	Total samples
Apricot pits		1	1
Oil, lubricating	1		1
Preservative	1		1
Wool	1	1	2
Waste	1		1
Water	12		12
Totals	16	2	18

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1917, to June 30, 1918.

Foods and Food Products—Official.

Unofficial.

State Institutions.

Material	Conforming to specifications	Not conforming to specifications	Total
Baking powder	5	1	6
Baking Soda	3		3
Butter	21	24	45
Cereals	11	1	12
Cheese	3	5	8
Chocolate	5	1	6
Coffee	43	4	47
Condiments	16	1	17
Crackers	2	1	3
Cream of tartar	1	2	3
Cream of tartar substitute	4	1	5
Extracts	13	2	15
Feed	20	3	23
Fish	3	2	5
Flour	29	6	35
Fruit	19	2	21
Gelatine	3		3
Jelly	3		3
Lard	2		2
Lard compound	3	1	4
Meat	5	1	6
Milk	1		1
Oil, edible	4	1	5
Pastes, alimentary	8	3	11
Spices	63	16	79
Sugar	3		3
Syrup	14		14
Tea	19	14	33
Vegetables	9	2	11
Vinegar	21	2	23
Totals	356	96	452

REPORT OF THE STATE BOARD OF HEALTH.

SUMMARY OF ANALYTICAL WORK—(Continued).

July 1, 1917, to June 30, 1918.

Miscellaneous—Unofficial.

State Institutions.

Material	Conforming to specifications	Not conforming to specifications	Total
Blanket	1	.....	1
Borax	1	.....	1
Calcium acid phosphate	1	.....	1
Cleanser	2	5	7
Colors .....	.....	1	1
Hair dye .....	.....	2	2
Linotype metal	1	.....	1
Lye	3	.....	3
Matches .....	.....	1	1
Oil, lubricating	2	.....	2
Soap	27	8	35
Shoe paste	1	.....	1
Starch, laundry	4	.....	4
Tallow	1	.....	1
Tobacco	2	.....	2
Turpentine	1	.....	1
Varnish	1	.....	1
Totals	48	17	65

SUMMARY OF ANALYTICAL WORK—(Continued).

Foods and Food Products.

Cold Storage.

Material	Number not in violation of California Pure Foods Act	Number in violation of California Pure Foods Act	Total
Cheese	1	.....	1
Peppers	1	.....	1
Eggs	1	.....	1
Eggs, dried	1	.....	1
Fish .....	.....	1	1
Fruit	1	.....	1
Nuts	14	.....	14
Totals	19	1	20

SUMMARY OF ANALYTICAL WORK.

Year Ending June 30, 1917.

Material	Legal samples	Illegal samples	Total samples
Foods and food products, official	649	979	1,628
Drugs, official	112	98	210
Foods and food products, unofficial	200	196	396
Drugs, unofficial	8	8	16
Miscellaneous, unofficial	11	.....	11
State Institution	1,630	201	1,831
Cold storage	21	62	83
Totals	2,631	1,544	4,175

SUMMARY OF ANALYTICAL WORK.

Year Ending June 30, 1918.

Material	Legal samples	Illegal samples	Total samples
Foods and food products, official.....	688	1,072	1,760
Drugs, official	41	61	102
Foods and food products, unofficial.....	323	294	617
Drugs, unofficial	5	4	9
Miscellaneous, unofficial	16	2	18
State institution	404	113	517
Cold storage	19	1	20
Totals.....	1,496	1,547	3,043

SUMMARY OF ANALYTICAL WORK.

For the Biennial Period.

Material	Legal samples	Illegal samples	Total samples
Foods and food products, official.....	1,337	2,051	3,388
Drugs, official	158	159	312
Foods and food products, unofficial.....	523	490	1,013
Drugs, unofficial	13	12	25
Miscellaneous, unofficial	27	2	29
State institution	1,434	314	1,748
Cold storage	40	63	108
Totals.....	3,527	3,091	6,618

BIENNIAL REPORT OF THE BUREAU OF SOCIAL HYGIENE.

LEWIS MICHELSON, M.D., Director.

Origin.

The Bureau of Social Hygiene of the California State Board of Health was established as a war measure, August 13, 1917.

When the control of venereal diseases came to be recognized as a vital necessity in the conduct of the war, a delegation of public spirited men waited upon Governor Stephens with a request for the establishment of a health bureau devoted exclusively to the purpose of preventing the spread of these diseases. The delegation included Mr. Warren Olney, Jr., and Dr. Milbank Johnson of the State Military Welfare Commission, Colonel Lynch, U. S. A., Lieutenant J. E. Miller, U. S. N., and Doctors George E. Ebricht and W. A. Sawyer, president and secretary of the State Board of Health.

The Governor agreed with the delegation that there was urgent necessity for such a bureau and appropriated from the military emergency funds thirty thousand dollars a year for two years for its support, thus making California the first state in the Union to attack the problem actively. Since then eleven states have followed her example.

It was agreed that the bureau's main purpose should be to co-operate with the Army and Navy in reducing to a minimum venereal diseases in the soldiers and sailors stationed in the state. To do this, of course, it was necessary to prevent these diseases in the civil population near army and navy posts, and to extend the work as rapidly as possible throughout California.

Functions.

The functions of the bureau were tentatively as follows:

DIRECT CONTROL.

1. To secure the reporting of cases of syphilis and gonococcus infection, together with the probable sources of infection, by physicians and by the medical officers of the army and navy.
2. To investigate, with the assistance of local officials, any suspected foci of infection and to isolate infectious persons whenever it is necessary to prevent their spreading disease.
3. With the co-operation of cities and counties to care for the men and women isolated on account of venereal disease in public isolation hospitals until the patients are no longer infectious.
4. As far as possible to secure the medical examination for venereal diseases of male and female prisoners and other appropriate groups, and to provide for their isolation and treatment so that they will not spread disease when released.
5. Through the operation of this plan to prevent the heretofore common evil of one community "passing on" to another its undesirables, thereby multiplying foci of infection.
6. To focus on this subject the social forces necessary to give former prostitutes, after they have been put into good physical condition, an opportunity to enter into productive occupations under conditions fair to themselves and to the community.

PUBLIC OPPORTUNITIES FOR DIAGNOSIS AND TREATMENT.

1. To investigate all clinics or hospitals treating venereal diseases and to bring into existence adequate day and evening clinics and opportunities for hospital treatment for syphilis and gonorrhea.

2. To make a list of accredited clinics in which venereal diseases are treated, accrediting only those which reach high standards in staffs, equipment and results.

3. To purchase and issue, without charge, to approved public hospitals and clinics, salvarsan or approved substitutes, for use in making cases of syphilis noninfectious in the shortest possible time.

4. To arrange with city laboratories to give free diagnostic tests for syphilis and gonococcus infections, and to encourage the more general use of the free Wassermann tests and other tests available at the Bureau of Communicable Diseases.

EDUCATIONAL.

1. To issue printed pamphlets, cards and placards of information relative to the prevention of venereal disease, and to co-operate with the Army and Navy, and other agencies in giving talks to appropriate groups.

2. To co-operate with the Military Welfare Commission in the suppression of prostitution as the principal source of venereal diseases, but avoiding confusion of the campaign against venereal diseases with the movement against vice as a strictly moral issue.

3. To oppose any local plan for licensing prostitution or issuing certificates of health to prostitutes, by showing that this is in conflict with modern methods of control of venereal diseases, and to substitute the above program, which is entirely consistent with the suppression of prostitution.

Staff.

Dr. W. A. Sawyer, secretary of the State Board of Health, first assumed the duties of director of the bureau and organized the staff. On September 21, 1917, Dr. H. G. Irvine, assistant professor of dermatology, University of Minnesota, accepted the directorship for the period of six months, and was followed by Dr. Lewis Michelson, chief of urological clinic, Leland Stanford Junior University, San Francisco.

Two sanitarians, Dr. Ethel M. Watters and Dr. W. M. Dickie, were appointed. Miss Marian Lynne served as social service director. The six state district health officers, by actively carrying out the bureau's plans calling for the reporting and investigation of cases of venereal disease in their several districts, became, essentially, part of the staff; and co-operation with the U. S. Army and Navy authorities and the Public Health Service, completed a thorough organization.

With the necessary office assistants, offices were opened in San Francisco at 525 Market street. Later, a branch was added in Los Angeles.

Program.

Method of Co-operation with the U. S. Army, U. S. Navy and U. S. Public Health Service. The bureau, having been organized as a war emergency measure, active co-operation with the military and Public

Health Service was one of the first objects to be attained. All cases of venereal disease in the camps are reported to this bureau. Regular reports of the sources of these infections are forwarded to the local health officer, as well as to the bureau. The latter checks up the information to the health officers in the state and also notifies officials of other states, when these sources are discovered to be outside of California. By this procedure many foci of infection have been located.

Lieutenant Allison T. French of the U. S. Army was detailed to California in charge of the Surgeon General Extra-Cantonment office for combating venereal disease and the Law Enforcement Division of the War Departments of the Commission on Training Camp Activities. The aid rendered by Lieutenant French's department in stimulating and enforcing the bureau's program, has been invaluable. Regular meetings of the California Military Welfare Commission with Lieutenant French and the director of this bureau, have given opportunity for most effective co-operation and have resulted in the carrying out of the bureau's policy to an extent that would otherwise have been impossible.

In many communities bordering on the camps, facilities for isolating venereally infected cases were totally inadequate. With the assistance of the military, state and local authorities every such community has now provided facilities and equipment for this work. To further the War Department's declaration that suppression of prostitution is essential in the control of venereal disease, many meetings of the military, local judiciary, police authorities and representatives of this bureau, have been held. Through these conferences, laws applying to the suppression of prostitution have been invoked and put into operation. In all the communities of California, law enforcement has been actively stimulated.

The different military camps are visited by representatives of the bureau, conferences are held with the medical officers and suggestions are made as to the best methods of achieving control of these diseases. Such conferences have been of mutual benefit.

Medical facilities were meager in the beginning, when the camps were established. Laboratory work was necessarily handicapped. Through the Bureau of Communicable Diseases of California's State Board of Health, laboratory facilities were extended to the posts. Several of them still avail themselves of this privilege.

On the educational side, the bureau has also been of assistance. Lecturers on the subject of venereal diseases have been given to over 70,000 enlisted men, at the request of the Commission on Training Camp Activities, by whom these lecturers have been accredited. At the request of camp commanders, appropriate literature and placards have been placed at their disposal. The stereomotograph of the bureau has been effectively employed in giving exhibitions at the different camps. Military and federal authorities have reciprocated by keeping the bureau informed on matters of importance and by forwarding all their publications bearing on this subject.

Control.

Special Bulletin No. 24 on Regulations for the Prevention of Syphilis and Gonococcus Infections was adopted October 6, 1917, and amended March 2, 1918.

Reporting of Cases. In order to successfully attack a disease, there must be data bearing on its prevalence, its favored localities, and its carriers. Reporting of syphilis and gonorrhea by numbers (not by names) had been made compulsory under paragraph 2979a of the Political Code of California, but had not been strictly enforced. Under section 13 of the Public Health Act violation of this rule is a misdemeanor. At first, physicians were required to report cases by their personal history number; later, the serial number of the bureau was substituted. But in case a patient requiring medical aid for these diseases discontinues treatment and fails to report to a physician for a period of more than ten days, his (or her) name is sent to the Bureau of Social Hygiene. Investigation follows, usually through the local health officer, and suitable treatment is made obligatory.

To avoid duplicate reporting and the possibility of a patient's name being unjustly reported, physicians treating a case are required to inquire from and ascertain whether such person had theretofore consulted with or been treated by any other physician; and if so, to notify that physician that his former patient is continuing treatment. It shall be the duty of the applicant for treatment to furnish this information, and a refusal to do so, or falsely stating the name and address of such physician or person consulted, shall be deemed a violation of quarantine, and all the facts of the case, including the number, name and address of the patient, shall be reported to the State Board of Health by the physician or other person so consulted.

It shall be the duty of the physician or person consulted, in case the applicant has heretofore received treatment, to immediately notify, on a card supplied for the purpose, the physician or person last theretofore treating such applicant of the change of adviser. Should the physician or person previously consulted fail to receive such notice within ten (10) days after the time appointed for the appearance of such diseased person, the said diseased person shall be deemed to have violated quarantine, and it shall at once become the duty of such physician or person to report to the State Board of Health the name and address of such diseased person.

Following are facsimiles of the cards issued by the bureau for the reporting of these conditions:

No.-----

REMEMBER THIS NUMBER AND FOLLOW INSTRUCTIONS

You are given this pamphlet of instructions with this serial number by your doctor because the law required him to do so and to report your case to the Health Officer by this number **WITHOUT REVEALING YOUR NAME.**

If you change doctors for any reason and wish to keep your name concealed you must see to it that the doctor you last consult notifies the doctor previously having charge of your case within **TEN DAYS** (10 days).

If you fail to come for treatment at the time ordered by your doctor within the period in which your disease is infective and he does not receive notice within **TEN DAYS** from another doctor, stating that you have placed yourself under his professional care, the doctor giving

you this pamphlet is obliged by law to report your NAME AND ADDRESS to the health authorities as a person suffering from a disease dangerous to the public health and presumably not under proper medical advice and care sufficient to protect others from infection. You will then be liable to quarantine or such other procedure as the Board of Health may determine. If you want your name kept secret, follow these instructions carefully. Your doctor will tell you when your case is no longer infectious.

No.-----

CARD A

PHYSICIAN'S REPORT OF CASE OF GONORRHEA OR SYPHILIS

Strike out gonorrhea or syphilis as case may be

Make the Serial Number a Part of Your Case Record

Date-----19-----Cal.

City or town

Age-----Sex-----Color-----Marital relation-----

Single, married, widowed, divorced

Occupation-----Date of infection-----

Source of infection-----

Commercial or clandestine prostitute—Address if investigation is indicated

Was patient intoxicated at time of exposure?-----Unemployed-----

Is patient in infectious state of disease?-----If so, is patient likely to infect others?-----

Has this case been previously reported?-----Under what number?-----

Has diagnosis been confirmed by laboratory test?-----

Wassermann, smear for gonococci or spirochete

M. D.

Address

Mail this card immediately to the State Board of Health, Sacramento, and in addition report the case by number to your local Health Officer.

CARD B

Form for Reporting Change of Physician.

Date-----19-----

Cal.

DEAR DOCTOR:

In accordance with Section 8 of the regulation of the California State Board of Health governing venereal disease control I herewith notify

CARD C

you that----- of-----

Name of patient

Address

reported by you as number-----and formerly under your treatment is now under my care and-----name and address need not

His or her

be reported to the health authorities as provided for according to this regulation.

Respectfully yours,

M. D.

Address

Form for Reporting Patient as Dangerous to Public Health

----- Cal.
 ----- City or town
 ----- 19-----

BUREAU OF VENEREAL DISEASES, STATE BOARD OF HEALTH
 525 Market Street, San Francisco, Cal.

Gentlemen:

This is to notify you that-----
 ----- Name of patient (Serial No.)

of----- has not reported to me within ten (10)
 ----- Address

days of time appointed, nor have I received any notification that-----
 ----- He or she
 is under the care of any other physician. In accordance with Section
 8 of the regulations of the State Board of Health governing venereal
 diseases I am therefore reporting----- name and address.
 ----- His or her

Respectfully yours,

----- M. D.

 ----- Address

Instructions to the patient.

It shall be the duty of the physician in attendance on a person having syphilis or gonococcus infection, or suspected of having syphilis or gonococcus infection, to instruct him in precautionary measures for preventing the spread of the disease, the seriousness of the disease, and the necessity for prolonged treatment, and the physician shall, in addition, furnish approved literature on these subjects.

NOTE 1.—Approved literature for distribution to patients may be secured from the Bureau of Venereal Diseases of the State Board of Health, 525 Market street, San Francisco.

NOTE 2.—The following instructions are required as a minimum by Rule 2:

(a) To patients having syphilis:

1. Syphilis or pox is a contagious disease. It can usually be cured, but it requires two or more years of treatment.
2. You must not marry until a reputable physician has pronounced you cured.
3. Avoid all sexual relations.
4. Always sleep alone.
5. Do not kiss anyone.
6. Never permit anyone to use anything which has been in your mouth, such as toothpicks, toothbrushes, pipes, cigars, pencils, spoons, forks, cups, etc., or anything else that you have contaminated.
7. If you have to see a dentist, tell him about your disease before he examines your teeth.
8. Avoid patent medicines, so-called "medical institutes" and advertising "specialists."
9. Consult a reputable physician, or, in case of financial inability, the city or county physician, or a reputable dispensary such as is found in connection with most large public hospitals, and follow directions absolutely.

(b) To patients having gonorrhea:

1. Gonorrhea, "clap," or gleet, is a serious contagious disease. If properly treated it can usually be cured.
2. You must not marry until a reputable physician has pronounced you cured.
3. Avoid all sexual relations.
4. Always sleep alone, and be sure that no one uses your toilet articles, particularly your towels and wash cloths.
5. Always wash your hands thoroughly after handling the diseased parts. The discharge, if carried to your eyes, may cause blindness.
6. Avoid patent medicines, so-called "medical institutes" and advertising "specialists."
7. Consult a reputable physician, or, if financially unable to do so, the city or county physician, or a reputable dispensary such as is found in connection with most large public hospitals, and follow directions absolutely.

NOTE 3.—If any person has knowledge that a person infected with syphilis or gonococcus infection is failing to observe adequate precautions to prevent spreading infection, he shall report the facts at once to the local health officer.

Health officers designated inspectors.

All city, county and other local health officers are, for the purpose of the control and suppression of venereal diseases, hereby designated and appointed inspectors, without salary, of the State Board of Health of California, under the provisions of section 2979 of the Political Code.

NOTE 1.—The following paragraph is quoted from section 2979 of the Political Code: "It (the State Board of Health) shall have general power of inspection, examination, quarantine and disinfection of persons, places and things, within the state, and for the purpose of conducting the same may appoint inspectors, who, under the direction of the board, shall be vested with like powers; *provided*, that this act shall in no wise conflict with the national quarantine laws."

Investigation and control of cases.

All city, county and other local health officers are hereby directed to use every available means to ascertain the existence of, and immediately to investigate, all reported or suspected cases of syphilis in the infectious stages and gonococcus infection within their several territorial jurisdictions, and to ascertain the sources of such infections.

In such investigations said health officers are hereby vested with full powers of inspection and examination, of all persons, places and things, and as such inspectors said local health officers are hereby directed:

(a) To make examinations of persons reasonably suspected of having syphilis in the infectious stages or gonococcus infection. (Owing to the prevalence of such diseases among prostitutes, all such persons may be considered within the above class.)

(b) To isolate such persons whenever, in the opinion of the secretary of the State Board of Health, isolation is necessary to protect public health. In establishing isolation the health officer shall define the limits of the area in which the person reasonably suspected or known to have syphilis or gonococcus infections and his immediate attendant, are to be isolated, and no persons, other than the attending physicians, shall enter or leave the area of isolation without the permission of the health officer.

(c) In making examinations and inspections of women for the purpose of ascertaining the existence of syphilis or gonococcus infection, to appoint women physicians for said purposes where the services of a woman physician are requested or demanded by the person examined.

(d) In cases of quarantine or isolation, not to terminate said quarantine or isolation until the cases have become noninfectious or until permission has been given by the State Board of Health or its secretary.

Cases of gonococcus infection are to be regarded as infectious until at least two successive smears taken not less than 48 hours apart fail to show gonococci.

Cases of syphilis shall be regarded as infectious until all lesions of the skin or mucous membranes are completely healed.

(e) Inasmuch as prostitution is the most prolific source of syphilis and gonococcus infection, all health officers are directed to use every proper means of repressing the same, and not to issue certificates of freedom from venereal diseases, as such certificates may be used for purposes of solicitation.

(f) To keep all records pertaining to said inspections and examinations in files not open to public inspection, and to make every reasonable effort to keep secret the identity of those affected by venereal disease control measures as far as may be consistent with the protection of the public health.

Report of unusual prevalence.

When the local health officer, through investigation, becomes aware of unusual prevalence of syphilis or gonococcus infection, or of unusual local conditions favoring the spread of these diseases, he shall report the facts at once to the Bureau of Venereal Diseases, 525 Market street, San Francisco.

Quarantine.

Any person now under treatment, or who shall hereinafter present himself (or herself) to any physician or person for treatment or diagnosis of any venereal disease, shall be considered to be in quarantine. The requirements of quarantine shall be considered fulfilled when the patient is reported by serial number, as provided for in Note 1 of Rule 1, and as long as he (or she) remains under the observation of any one licensed under the laws of California to treat disease.

Control of prostitutes.

Special procedures have been made necessary to insure treatment for the principal carrier of venereal disease—the prostitute, and to prevent the plying of their trade by women who have been declared infectious. A health officer has the power to quarantine a case which he has reasonable suspicion to believe is a carrier of a communicable disease. As from 70 to 80 per cent of all prostitutes have been found infected with venereal disease, a reasonable suspicion is justified. These women are arrested, charged with some act involving moral turpitude, usually vagrancy. The health officer declares them quarantined, thus preventing their being bailed out and so defeating the purpose for which they are being detained. Those found infected are held for treatment, and the noninfected returned to the legal authorities. The type of quarantine being regulated by the local health officers, the manner of carrying out the same has varied according to the facilities of communities to handle such cases. In all health departments the gonorrheal cases are held until, as far as clinical and microscopic tests can show, the cases are cured. With syphilitics, all are held until they are noninfectious and in many health departments, until the Wassermann reaction is negative. In some localities after the cases have been rendered noninfectious, they have been returned to the courts and released on their own recognition, being required to bring a report every month from the private physician treating them. There have been very few attempts by those arrested to evade the quarantine proceedings. Eight attempts to obtain a writ of habeas corpus have failed and the patient has been remanded to the custody of the health officer by the courts. In San Jose the health officer quarantined a case that he regarded as reasonably suspicious, although no charge had been lodged by the police. The city manager, chief of police and city health officer were sued for false imprisonment but the case was immediately dismissed.

Until the above method was followed, arrest of women delinquents resulted in their immediately giving a hundred dollar bond bail. This bond was almost invariably forfeited. If it was not forfeited, the effect was almost as disastrous in the spread of venereal disease, for while out on bail, the offender continued to practice prostitution. This was the case in large cities. In smaller communities formerly, suppression of prostitution was accomplished by closing houses of ill-fame and ordering their inmates out of town. There was no attempt made to examine these women to detect disease; they were simply "floated" to some other community, their problem shouldered on to a neighboring town.

Examination of persons arrested for crimes involving moral turpitude.

Most of the cities have failed to report the data from such cases, but San Francisco, Los Angeles and San Diego give the following:

The San Francisco Health Department reports the total number of women examined at the county jail from August 29, 1917, to September 1, 1918, as 1,225; 248 infected with gonorrhea, 402 with syphilis, and 2 with chancroids. Approximately 53 per cent out of those examined. Of the 96 men arrested with the women four presented evidences of gonorrhea and nine of syphilis. The low number of men examined was

due to the fact that only since April have the police been arresting them. The low percentage of venereal diseases present may be accounted for because the women examine the men and refuse to serve those found with evident lesions. One may contrast with these figures, those given for the Men's Department, East Side Jail of Los Angeles, where out of 295 prisoners examined, 12 were found infected with gonorrhea and 98 with syphilis—37 per cent infected.

At the Mission Valley Hospital out of 122 women examined, 14 showed syphilis only, 17 gonorrhea only, 16 both syphilis and gonorrhea—approximately 39 per cent.

The Women's City Jail in Los Angeles shows from March 1, 1917, to July 1, 1918, out of 257 women examined there were:

50 infected with syphilis

103 infected with gonorrhea.

67 infected with both gonorrhea and syphilis (approximately 86 per cent).

The wide variance in the percentage of women found infected must be looked for in the different methods of examination, as well as the personal opinions of the clinicians. Many of them basing their diagnosis on the clinical aspect as well as the laboratory findings, while the examiners with very little practical experience require a positive laboratory finding. This is an important point, as there is no doubt that a large percentage of cases with negative laboratory evidences, give clinical symptoms that should make for a positive diagnosis.

Increased facilities for diagnosis and treatment.

Laboratory. Through the Bureau of Communicable Diseases of the State Board of Health, laboratory facilities are offered free for all tests necessary for the diagnosis of venereal diseases. This aid has proved of immense value, as, excepting in the largest cities, laboratory facilities are exceedingly meager. Laboratory examinations have been brought within the reach also of private practitioners, and have not only helped in the diagnosis of cases, but have stimulated the physician to develop a more scientific knowledge of venereal diseases.

Direct aid from medical staff of the bureau.

The special knowledge of the medical staff, as well as its experience with all manifestations of this complex question, has been placed at the disposal of health departments and practicing physicians. In many communities the experience of the local medical authorities in venereal diseases has been extremely limited and, as a consequence, organization of proper diagnostic and treatment facilities has been handicapped. Members of the medical staff have continually assisted in the organization, as well as in the actual examination and treatment of cases.

Approved dispensaries and hospitals.

In order to bring up the standards of some of the existing dispensaries and hospitals treating venereal disease, to encourage the formation of additional public dispensaries, and to assist persons needing institutional treatment to ascertain which institutions have adequate staffs and equipment and standards, the bureau has temporarily accredited certain clinics and hospitals, a list of which is appended. Arsephenamine is issued only to clinics and hospitals approved by the State Board of Health.

STANDARDS GOVERNING THE APPROVAL OF DISPENSARIES AND HOSPITALS TREATING VENEREAL DISEASES.**Dispensaries treating syphilis.**

1. **Special Department:** Syphilis shall be treated in a special department or the Department of Dermatology.

2. **Number of Sessions:** The dispensaries shall be open at least three times a week, day or evening.

3. **Staff:** The staff shall be adequate in number and training.

4. **Equipment:** Enough well-arranged rooms, laboratory facilities and equipment, with instruments and apparatus, shall be provided.

5. **Beds:** Every dispensary shall have at its disposal beds for isolation or treatment.

6. **Records:** Adequate records of all cases shall be kept.

7. **Social Service Required:** A social service department shall be maintained and adequate measures adopted to secure a regular attendance of patients.

8. **Information to Patients:** Clinicians shall devote the amount of time necessary for intelligently informing new patients of the seriousness of their disease, the necessity for prolonged treatment, and the precautions necessary, to prevent the spread of infection to others, and the clinics shall, in addition, furnish approved literature on these subjects. (This literature can be secured from the Bureau of Venereal Diseases.)

9. **Microscopic Examinations:** Microscopic examinations of suspected initial lesions shall be made.

10. **Wassermann Tests:** Wassermann tests shall be performed in the dispensary laboratory or other approved laboratory.

11. **Administration of Salvarsan or Equivalents:** Salvarsan or accepted equivalents shall be administered to all cases where there are no contraindications. (Salvarsan or approved substitutes may be obtained without cost from the Bureau of Venereal Diseases, 525 Market street, San Francisco, for the treatment of infectious cases of syphilis in approved dispensaries.)

12. **Procedure Covering the Discharge of Patients:** Suitable tests and observations shall be made of all patients for a period of not less than two years after the conclusion of adequate treatment. (See pamphlet, "Modern Treatment of Syphilis," obtainable from the Bureau of Venereal Diseases.)

13. **Transfer of Patients:** If it becomes necessary for any reason to discharge a patient still uncured, the patient shall be referred to an approved dispensary or a reputable physician.

14. **Annual Report:** An annual report of work done in the dispensary shall be made. It is suggested that this include the number of new and old patients and number of visits made, the number of patients continued under observation and treatment from one year into the next, the number of doses of salvarsan or equivalent administered (with a separate list of free doses), and the number of patients discharged as cured.

Dispensaries treating gonorrhea.

1. **Number of Sessions:** Dispensaries shall be open at least three times a week, day or evening.

2. **Staff:** The staff shall be adequate in number and training.

3. **Equipment:** Enough well-arranged rooms, laboratory facilities and equipment, with instruments and apparatus, shall be provided.

4. **Beds:** Every dispensary shall have at its disposal beds for isolation or treatment.

5. **Records:** Adequate records of all cases shall be kept.

6. **Social Service Required:** A social service department shall be maintained and adequate measures adopted to secure a regular attendance of patients.

7. **Information to Patients:** Clinicians shall devote the amount of time necessary for intelligently informing new patients of the seriousness of their disease, the necessity of treatment until cured, and the precautions necessary to prevent the spread of infection to others, and the clinic shall, in addition, furnish approved literature on these subjects. (This literature can be secured from the Bureau of Venereal Diseases.)

8. **Microscopic Examination:** Systematic microscopic examination of discharges shall be made in departments treating patients affected with gonorrhea.

9. Facilities for Asepsis and Antisepsis: All departments treating patients affected with gonorrhea shall be equipped with adequate facilities for asepsis and antisepsis.

10. Urethroscopic and Cystoscopic Examination: Facilities for urethroscopic and cystoscopic examination shall be provided and regularly employed by the attending clinicians.

11. Procedure Governing Discharge of Patients: Patients shall be discharged as cured only after repeated negative clinical and microscopic examinations.

12. Transfer of Patients: If it becomes necessary for any reason to discharge a patient still uncured, the patient shall be referred to an approved clinic or reputable physician.

13. Annual Report: An annual report of work done in the dispensary shall be made. It is suggested that this include the number of new and old patients, the number of visits made, the number of patients continued under observation and treatment from one year into the next, and the number of patients discharged as cured.

Hospitals treating syphilis and gonorrhea.

1. No Discrimination Against Venereal Diseases: Patients having venereal diseases must be accepted under the same conditions as other patients.

2. General Standard of Hospital: The hospital shall be properly equipped and well conducted.

3. Staff and Equipment: There shall be adequate staff and equipment for the diagnosis, treatment and keeping of records in cases of syphilis or gonococcus infection in general accord with the standards indicated for approved dispensaries.

4. Follow-up: Social service and follow-up work shall be carried on as indicated for approved dispensaries, either by the hospital or by an approved dispensary to which patients are transferred.

Hospital and clinical facilities increased.

Practically all public hospitals have hitherto refused to take venereal cases except when bedridden. This attitude has not only prevented treatment at the time when cure is most possible and when it could be most speedily accomplished, and when the case is acutely infectious, but it has added to financial cost by requiring prolonged care in chronic and incurable cases. The bureau has conducted an active campaign against this attitude and at present all public hospitals will accept cases upon the recommendation of the health officers. Many counties have made provisions for special wards where isolation can be carried out; notably:

- (a) Los Feliz Hospital, Los Angeles (infected prostitutes).
- (b) Mission Valley Hospital, San Diego (infected prostitutes).
- (c) Riverside Hospital, Riverside (infected prostitutes).
- (d) Special wing at Bakersfield County Hospital (both men and women).
- (e) Ward L, San Francisco Hospital (infected women).
- (f) Sacramento Detention Hospital, Sacramento.
- (g) Many other county hospitals isolate these cases but have not provided special wards.

Throughout the state, clinical facilities are totally inadequate for the treatment of venereal diseased indigents. This has been one of the very difficult problems the bureau has had to deal with. Most of the clinics in the largest cities are not easily accessible, and with the exception of the Los Angeles City Clinic, no provisions are made for treatment at night. The smaller cities and towns have either no clinics or those which have been established have not a proper staff or equipment. Although the establishment of clinics has been rendered extremely difficult, by lack of local funds (a loss of revenue in several places, through prohibition) and lack of physicians, a practical beginning has been made by arranging for the treatment of these cases with the

health officers or county physicians. Several of the cities have agreed to provide for the cost of clinics in next year's budget. Owing to the disorganization in the medical profession, due to the war, hospitals and clinics have, with few exceptions, been unable to fulfill the standard required by the State Board of Health. The following have temporarily been accredited:

Berkeley Dispensary, Berkeley.
Children's Hospital, San Francisco.
College of Physicians and Surgeons, San Francisco.
Fresno County Hospital.
Los Angeles County Hospital.
Los Angeles County Jail Clinic.
Los Feliz Hospital, Los Angeles.
Los Angeles Juvenile Hospital.
Genito-urinary Clinic, Los Angeles.
Mission Valley Hospital, San Diego.
Oakland College of Medicine, Oakland.
Sacramento City Dispensary and Receiving Hospital.
Santa Barbara Cottage Hospital.
San Francisco Hospital.
San Francisco Polyclinic.
Selwyn Emmett Graves Memorial Dispensary, Los Angeles.
Stanford University Clinic, San Francisco.
University of California Hospital, San Francisco.
Juvenile Detention Home, San Francisco.
Fresno City Clinic.
Pasadena Hospital Association.
University of Southern California Clinic, Los Angeles.
Boyle Heights Dispensary, Los Angeles.
Orange County Hospital.

Free arsephenamine.

In the modern treatment of syphilis, arsephenamine ranks first. Before the war this drug had been so expensive as to place it beyond the reach of many unfortunates whose needs were urgent. Since the war the cost has been reduced to much less than half, but it is still beyond the reach of many. The bureau issues arsephenamine free to health officers and approved hospitals and clinics for use in indigent cases. At first it was issued only to infectious cases of syphilis, but later a more liberal policy has been adopted, and now to practically all stages of syphilis this relief is afforded. For cerebrospinal cases arsephenamine is issued only to those institutions having the highly trained staff necessary for scientific treatment of such cases. Arsephenamine is issued only upon the receipt of a special requisition form of the bureau. A treatment card showing details of the case before and during treatment must be returned for each ampoule. In spite of the fact that this treatment has been carried out by physicians, some of them deficient in experience in this line, there have been very few severe reactions (not over fifty) and not one death has occurred. In 95 per cent of the cases the gravity method has been used with 90-100 c.c. of distilled water. In several institutions it was found that the severe reactions were occasioned by the use of distilled water purchased from druggists or from that which had been on hand for several days. When freshly distilled water was used marked reactions were practically eliminated. Up to July 1, 1918, 2,862 ampoules of arsephenamine have been issued to health officers, clinics and hospitals.

Educational measures.

In addition to the various measures already enumerated, which in themselves have educational value, the bureau has undertaken a system of popular instruction, which includes lectures on venereal diseases and sex hygiene. Forty-eight lectures have been given to the enlisted men in camps. Twenty-one lectures have been given to civilian groups. Sets of posters from the American Social Hygiene Society and the Oregon Social Hygiene Society have been exhibited, as well as posters worked out by this bureau and designed by Mr. Roy Young. The stereomotorgraph has been shown at several military camps, as well as to civilian groups. Placards on venereal diseases for latrines and public places, as well as pamphlets, have been prepared by the Bureau, and issued free of cost. A list of these is given in the summary.

Suppression of prostitution.

No program for the control of venereal disease can be complete which lacks measures directed to the elimination of the principal cause of these maladies—prostitution. In addition to the procedure already outlined, the bureau has been most active in co-operating with the authorities whose duty is the suppression of prostitution. In communities in which a segregated district has been tolerated, the attention of agencies dealing with the prostitute has been directed to the necessity of no longer permitting this state of affairs. When this has not availed, an aggressive campaign has been instituted to bring pressure to bear upon delinquent officials. This has been effected through public-spirited citizens, civic clubs, and, in many cases, the influence of the War Department, and of the State Military Welfare Commission has been invoked. A great deal has been accomplished along this line by the social service workers' personal appeal to individual citizens and especially to women's clubs. At present throughout the state, with the exception of a few isolated communities, there are no open houses of ill-fame.

To a lesser extent cities and towns have, with varying degrees of success, suppressed the clandestine prostitute, as well. One of the most difficult problems has been that of dealing with willful young girls, who may not be classed as wholly delinquent, yet who require upbuilding, disciplinary, moral assistance. Probation officers, policewomen, and social service workers have been appointed for this work. This may well be regarded as one of the most essential points in preventive medicine.

Any local plan that has for its object the issuing of certificates of health to prostitutes has been most actively combated, the fallacy of such a proceeding being now well recognized.

Rehabilitation of prostitutes.

The cure for venereal disease in communities is in part physical and in part social. Each consecutive link in the chain forged by experienced handling of this grave menace to public health is an essential one. There must be first, direct treatment of the disease; second, law-enforcement measures; third, education; fourth, rehabilitation of delinquent women.

This last, a world-old problem, is of course the most difficult. But any plan that does not include this is foredoomed to failure. If the

diseased woman is merely treated, given a jail sentence and, at the expiration of the same, turned loose, it will only result in her again resuming her trade (probably to command a higher price, as she can assure her patrons that she has been through a course of treatment at a scientific institution. This has been known to occur in not a few cases). Inevitably she will again become infected; her erring feet will once more be set to tread in the old vicious circle which holds no hope of betterment, either for her or for the health of the community. Her history will be a perpetual recurring arrest—cure—relapse; the feeble, wasteful way that has so long been tried with her and found wanting.

The bureau is advocating the establishment of one or more detention homes, preferably located on a farm, with a competent psychologist, on its managerial staff. Suitable vocational teachers should be provided so that when the woman is returned to the community, after detention, instead of leading a parasitical existence, she will be economically independent. It is planned to have the proper measures introduced at the next meeting of the legislature to provide for such institutions. Many women's clubs, as well as the Women's Legislative Council, are backing these measures. Los Angeles has already promised an appropriation of \$50,000 for a detention farm near the city.

Increase of facilities for the care of the mental deficient.

Approximately from 20 to 30 per cent of prostitutes are mentally deficient and should have permanent custodial care. In institutions for the feeble-minded accommodations and facilities for the care of such cases fall short by at least fifty per cent. It is absolutely essential to the right solution of this great problem that these institutions double their capacity at least.

Progress in various communities.

Los Angeles—City.

Los Feliz Hospital opened January 29, 1918. It is equipped to care for 51 patients. Women who are venereally diseased, or who have formed drug or liquor habits. The maintenance of an evening clinic, bacteriological examinations. All these costing approximately \$25,000.

The opening of a detention home for the rehabilitation of prostitutes is contemplated.

County.

The county maintains a Juvenile Hall Clinic and has surveyed the county jails, costing approximately \$5,500.

San Francisco.

Ward L, at San Francisco Hospital, opened August 15, 1917, for the treatment of women infected with venereal disease; diagnostic clinic supervised by a gynecologist, an assistant and a nurse, at \$2,000 per month. Total cost, approximately \$23,000.

Clinics in three county jails for the diagnosis and treatment of venereal disease, approximately \$1,000.

Clinics for the treatment and diagnosis of venereal diseases opened in each of the five emergency hospitals; no estimate of cost.

Clinic at the Juvenile Detention Home for the diagnosis, treatment and isolation of wards of the Juvenile Court, infected with venereal disease; no estimate of cost.

Laboratory work (Wassermann tests and slide examinations); no estimate of cost.

During 1918-1919, the San Francisco Hospital budget carries an appropriation of \$20,000 for the maintenance of Ward L and one of \$3,600 for the salaries of a bacteriologist and mental examiner.

Fifteen thousand dollars has just been appropriated for the renovation of the old Isolation Hospital for the care of patients with venereal disease. Operative cases will be held in Ward L.

This does not include the maintenance of this hospital. It will accommodate over 100 women.

Examination and treatment of male prisoners in city and county jails.

San Diego.

Erection of Mission Valley Hospital. Original cost \$10,000; equipment \$4,000; maintenance, \$5,500. Total cost, approximately \$19,500.

Alameda County.

Patients isolated and treated in the Alameda County Hospital; no estimate of cost.

Oakland.

Isolation and treatment of patients in the city jail; no estimate of cost.

Fresno County—City.

Establishment, equipping and maintaining a clinic for the diagnosis and treatment of venereal disease, together with bacteriological examinations, an appropriation of \$3,000.

County.

A clinic is maintained at the county hospital; a social service nurse, at a salary of \$125 per month, is employed and patients are isolated in the county hospital; no estimate of cost.

Kern County.

Establishment of a ward at the county hospital for the treatment of venereal disease; employment of a physician; \$8,000.

Monterey County.

Patients isolated and treated in the Monterey County Hospital; no estimate of cost.

Nevada County.

Patients isolated and treated in the Nevada County Hospital; no estimate of cost.

Placer County.

Patients isolated and treated in the Placer County Hospital; no estimate of cost.

Riverside County.

Cost of the venereal disease eradication has been estimated at \$3,000.

San Mateo County Hospital.

Patients isolated and treated in the San Mateo County Hospital; no estimate of cost.

Redwood City: A building has been renovated and furnished for the care and treatment of isolated venereally diseased women "camp followers" at Camp Fremont; no estimate of cost.

Menlo Park: The establishment of a venereal disease clinic.

Sacramento County.

Patients isolated and treated in the Sacramento County Hospital; no estimate of cost.

Sacramento: Clinic in city jail for diagnosis and treatment; employment of social service worker at \$125 a month; no estimate of cost.

The opening of detention hospital for the treatment of venereal disease patients.

San Joaquin County.

Patients isolated and treated in the San Joaquin County Hospital; no estimate of cost.

Santa Clara County.

At the county hospital venereally diseased patients are isolated and treated; bacteriological examinations made by the health department at San Jose; no estimate of cost.

Santa Barbara County.

New isolation hospital, part of which will be used for venereal disease work, estimated cost, \$7,500.

Shasta County.

Patients isolated and treated in the Shasta County Hospital; no estimate of cost.

This does not include the cost of any of the repressive measures against prostitution, nor does it include the money spent by the bureau.

CASES OF VENEREAL DISEASES REPORTED TO STATE BOARD OF HEALTH.**Gonorrhea.**

Month	1916	1917	1917	1918	1918
July	76		200		725
August	95		322		573
September	87		319		442
October	49		304		492
November	93		576		
December	50		351		
January		209		231	
February		112		254	
March		120		256	
April		166		301	
May		176		504	
June		151		390	
Totals.....	450	984	2,072	2,066	2,282
Army			14	562	652
Navy	77	12	322	276	214
Civilian	373	922	1,736	1,168	1,366

Syphilia.

Month	1916	1917	1917	1918	1918
July	118		114		408
August	114		142		291
September	98		143		428
October	159		170		281
November	134		212		
December	114		255		
January		178		230	
February		123		214	
March		113		326	
April		137		220	
May		131		232	
June		79		191	
Totals.....	737	701	1,036	1,442	1,308
Army				194	162
Navy	114	5	73	75	38
Civilian	623	756	963	1,173	1,168

Arsenobenzol Report for the Year Beginning August, 1917, and Ending June 30, 1918.

Number of ampoules of arsenobenzol sent to health officers and approved dispensaries.

San Francisco Health Department.....	790
Los Angeles City Health Department.....	541
Los Angeles County Health Department.....	300
San Diego Health Department.....	280
Fresno County Hospital.....	176
Santa Clara County Health Department.....	150
Kern County Health Officer.....	124
Stanford University Clinic.....	103
San Diego County Hospital.....	100
University of California Clinic.....	70
San Bernardino County Health Officer.....	42
San Francisco Polyclinic.....	33
Nevada County Health Department.....	32
Cottage Hospital—Santa Barbara.....	30
Fresno City Clinic.....	21
Selwyn Graves Memorial Dispensary.....	20
Sacramento Health Department.....	40
Oakland College of Medicine and Surgery.....	18
San Francisco Juvenile Detention Home.....	14
Children's Hospital, San Francisco.....	13
Oakland Health Department.....	12
Shasta County Health Officer.....	12
Monterey County Hospital.....	9
San Mateo County Health Officer.....	9
Contra Costa County Health Officer.....	6
Stanislaus County Hospital.....	6
Berkeley Dispensary.....	4
San Francisco College of Physicians and Surgeons.....	3
Santa Cruz County Health Officer.....	3
Tulare County Health Officer.....	3
Yuba County Health Officer.....	3
Siskiyou County Health Officer.....	3
Irvington Health Officer.....	3
Kings County Hospital.....	2
Sonoma County Health Officer.....	1
Total number.....	2,956

Treatment Reports Received.

250 patients received one dose.....	250
157 patients received two doses.....	314
154 patients received three doses.....	462
82 patients received four doses.....	328
37 patients received five doses.....	185
20 patients received six doses.....	120
7 patients received seven doses.....	49
7 patients received eight doses.....	56
4 patients received nine doses.....	86
1 patient received eleven doses.....	11
719.....	1,811
Ampoules spoiled for various reasons.....	22
	1,833

Occupations of Patients receiving Arsenobenzol from the Bureau.

Children.....	53
Housewives.....	100
No occupation.....	118
Laborers.....	122
Prostitutes.....	147
All other occupations.....	179
	719
Females.....	417
Males.....	302

719

**REPORT OF ARSENOBENZOL EXPENDITURE FROM SEPTEMBER, 1917, TO
JULY 1, 1918.**

Month	0.6 gms.	Price	Total cost	0.4 gms.	Price	Total cost
September and October.....	200	\$2 50	\$500 00	48	\$2 50	\$94 00
November	40	2 50	100 00	6	2 20	13 20
November	53	1 50	81 50			
December	178	1 50	267 00			
January	248	1 50	372 00			
February	1	1 50	1 50	199	95	189 05
February	273	1 15	313 95			
March	344	1 15	395 60	100	95	95 00
April	173	1 15	198 95	124	95	117 60
May	185	1 15	212 75	302	95	343 90
June	99	1 15	113 85	243	95	222 30
Totals.....	1,794		\$2,557 10	1,077		\$1,075 85

1,794, 0.6 gms., arsenobenzol, cost..... \$2,557 10

1,077 0.4 gms., arsenobenzol, cost..... 1,075 85

Total cost..... \$3,632 95

REPORT OF BUREAU OF VITAL STATISTICS.

GEORGE D. LESLIE, Director.

The usual statistical tables on births, deaths and marriages such as have appeared in preceding biennial reports are presented on pages following, for the calendar years 1917 and 1916. In the interest of economy there has been some condensation of material, in the omission of partial duplication of data in former tables for geographic divisions or groups of counties, but with the retention for the sake of reference of complete data for the whole 58 counties as well as for the 31 leading cities (of 5,000 population in 1910).

A new section on infant mortality, a subject of fresh and growing interest, is included among the vital statistics tables, previously limited to general summary, births, deaths and marriages. Additional data on infant mortality besides the tables here shown may appear in subsequent biennial reports.

With the condensation of statistical tables it has also been necessary to omit the extensive text discussion given in former reports, though the points noted in such discussions have varied relatively little year after year. However, a brief synopsis of statistics for 1917 and 1916 is presented herewith, arranged under the same topical headings used in the grouping of the statistical tables. This synopsis directs attention to the most interesting points shown in the tables.

The list of statistical tables, shown under Contents, will facilitate reference to detailed data available among the statistical compilations.

SYNOPSIS OF STATISTICS: 1917 AND 1914.*

I. Summary.

The California birth total has much more than doubled since the first year's registration of 20,974 for 1906, having risen steadily to 50,638 in 1916 and 52,230 in 1917.

The excess of births over deaths first shown in 1911 was as great as 10,146, or 24.1 per cent.

The death total, exclusive of stillbirths, has oscillated slightly since the start at 29,303 in 1906, being 39,860 in 1916 and 42,084 in 1917.

The marriages have fluctuated greatly from the total of 21,317 for 1906, numbering 30,996 for 1916 and as many as 36,283 for 1917.

In 1916 to 1917, births increased by 1,592, or 3.1 per cent, deaths by 2,224, or 5.6 per cent, and marriages by 5,287, or 17.1 per cent. The gain in marriages was the greatest annual increase since 1906.

The birth rate has grown steadily ever since 1906, while the death and marriage rates each fell at times in the twelve-year period.

For 1917 and 1916, respectively, the California birth rates per 1,000 population were 17.2 each year, the death rates were 13.9 and 13.5, and the marriage rates were 11.9 and 10.5. The latest birth rates mark the

*NOTE.—The vital statistics are presented for calendar, instead of fiscal years, to correspond with the annual mortality reports of the Federal Census Bureau.

highest points attained since 1906, but the death rates for 1917 and 1916, like those for several other years, stand below the high rates for 1912 and 1913 or for 1906 to 1908. The marriage rate for 1917 approaches the maximum for 1912, while the rate for 1916 was the same as for 1906.

STATISTICAL TABLES.

NOTE.—The vital statistics are presented for calendar, instead of fiscal, years, to correspond with the annual mortality reports of the Federal Census Bureau.

I. SUMMARY.

TABLE 1.—Main and Minor Geographic Divisions of California, with Counties Included in Each.

NORTHERN CALIFORNIA.

Coast counties.

Del Norte	Lake	Napa	Trinity
Humboldt	Mendocino	Sonoma	

Interior counties.

Butte	Modoc	Shasta	Sutter
Colusa	Nevada	Sierra	Tehama
Glenn	Placer	Siskiyou	Yuba
Lassen	Plumas		

CENTRAL CALIFORNIA.

San Francisco.

(City and county)

Alameda County.

(Including Oakland, Alameda and Berkeley cities.)

Other bay counties.

Contra Costa	Marin	San Mateo
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Coast counties.

Monterey	San Luis Obispo	Santa Clara	Santa Cruz
San Benito			

Interior counties.

Alpine	Inyo	Merced	Stanislaus
Amador	Kern	Mono	Tulare
Calaveras	Kings	Sacramento	Tuolumne
El Dorado	Madera	San Joaquin	Yolo
Fresno	Mariposa	Solano	

SOUTHERN CALIFORNIA.

Los Angeles city.

Rest of Los Angeles County.

Other counties.

Imperial	Riverside	San Diego	Ventura
Orange	San Bernardino	Santa Barbara	

NOTE.—Tables on Vital Statistics in this Biennial Report are presented mainly for each of the 58 counties of California and for the 31 cities of 5,000 population in 1910. In some cases, however, figures are available only for counties in groups as shown in the above list of Main and Minor Geographic Divisions.

TABLE 2.—Birth, Death and Marriage Totals, with Increase and Rate per 1,000 Population, for California: 1906 to 1917.

Year	Total	Increase		Rate per 1,000 population
		Number	Per cent	
Births.				
1917	52,290	1,592	3.1	17.2
1916	50,698	2,568	5.3	17.2
1915	48,075	2,068	4.5	16.5
1914	46,012	2,160	4.9	16.7
1913	43,852	4,522	11.5	16.4
1912	39,330	4,502	12.9	15.2
1911	34,828	2,060	8.4	14.0
1910	32,138	1,256	4.1	13.4
1909	30,882	2,805	10.0	13.4
1908	28,077	3,408	13.8	12.7
1907	24,674	3,700	17.6	11.6
1906	20,974			10.3
Deaths.				
1917	42,064	2,224	5.6	13.9
1916	39,860	884	2.1	13.5
1915	39,026	1,469	4.0	13.7
1914	37,537	*1,062	*2.8	13.6
1913	38,599	1,890	5.1	14.4
1912	36,709	2,697	7.9	14.2
1911	34,012	1,614	5.0	13.7
1910	32,398	1,413	4.6	13.5
1909	30,985	*302	*1.0	13.4
1908	31,287	192	0.6	14.1
1907	31,066	1,792	6.1	14.6
1906	29,303			14.4
Marriages.				
1917	36,283	5,287	17.1	11.9
1916	30,996	*455	*1.4	10.5
1915	31,451	*451	*1.4	11.0
1914	31,902	519	1.7	11.5
1913	31,383	107	0.3	11.7
1912	31,276	3,973	14.6	12.1
1911	27,308	2,895	9.5	11.0
1910	24,937	2,020	8.8	10.4
1909	22,917	1,178	6.4	9.9
1908	21,739	*1,295	*5.5	9.8
1907	23,005	1,688	7.9	10.6
1906	21,317			10.5

*Decrease.

TABLE 3.—Estimated Midyear Population, Births, Deaths and Marriages, and Rates per 1,000 Population, for Counties: 1917 and 1916.

County	1917					1916				
	Esti- mated midyear popula- tion	Births	Deaths	Mar- riages	Rate per 1,000 population		Esti- mated midyear popula- tion	Births	Deaths	Mar- riages
					Births	Deaths				
California	3,037,968	52,280	42,064	36,593	17.2	13.9	2,946,347	50,638	39,860	30,906
Alameda	330,758	5,205	3,704	3,540	15.7	11.5	319,018	4,658	3,570	2,774
Alpine	65	2	—	4	6.5	—	129	309	1	—
Amador	9,066	140	141	39	15.4	15.5	9,066	164	152	51
Butte	34,735	404	415	275	14.2	11.9	33,703	456	347	191
Calaveras	9,171	91	100	30	9.9	10.9	9,171	83	76	33
Colusa	8,001	142	120	51	17.7	15.0	7,983	144	91	40
Contra Costa	41,622	807	454	257	21.6	10.9	40,242	842	436	226
Del Norte	2,424	41	28	57	16.9	11.6	2,423	43	35	30
El Dorado	7,492	105	127	37	14.0	17.0	7,492	87	152	37
Fresno	103,246	2,417	1,344	1,155	23.4	13.0	99,418	2,180	1,116	1,069
Glenn	8,648	168	66	65	19.4	7.6	8,448	130	76	60
Humboldt	33,786	550	392	320	15.0	10.1	38,103	601	422	323
Imperial	18,928	300	380	307	31.2	20.1	18,162	506	319	244
Inyo	8,570	90	54	62	22.3	6.1	8,607	28	45	54
Kern	53,216	958	548	494	18.0	10.3	51,065	367	564	486
Kings	20,372	388	253	251	18.6	12.1	20,228	386	298	183
Lake	5,525	85	61	31	15.4	11.0	5,528	77	71	32
Lassen	5,014	115	68	39	22.9	13.6	4,865	132	66	57
Los Angeles	747,815	12,726	10,556	7,888	17.0	14.1	714,069	12,302	10,088	6,910
Madera	9,531	236	114	130	23.0	11.6	9,638	213	115	118
Marin	31,984	224	321	612	7.3	10.0	31,031	294	364	575
Mariposa	3,956	32	39	16	8.1	9.9	3,956	36	41	10
Mendocino	28,458	354	325	174	13.4	12.3	26,107	387	359	185
Mered	19,479	361	182	184	18.5	9.3	18,878	373	200	153
Modoc	7,005	104	44	75	14.8	6.3	6,892	110	41	55
Mono	2,042	6	4	4	2.9	2.0	2,042	7	9	2
Monterey	27,625	461	337	315	16.7	12.2	27,142	449	325	205
Napa	22,245	233	346	263	10.5	24.5	21,905	217	531	252
Nevada	14,955	177	205	89	11.8	13.7	14,955	198	204	85
Orange	45,198	1,061	652	1,502	23.5	14.4	43,703	1,028	584	1,467
Placer	20,028	334	273	90	17.7	12.6	19,778	347	239	104
Plumas	5,698	61	83	31	10.7	14.6	5,698	81	61	29
Riverside	46,959	681	582	608	14.5	12.4	45,257	731	556	484

TABLE 3.—Estimated Midyear Population, Births, Deaths and Marriages, and Rates per 1,000 Population, for Counties: 1917 and 1916.—Continued.

County	1917					1916								
	Esti- mated midyear popu- lation	Births	Deaths	Mar- riages	Rate per 1,000 population			Esti- mated midyear popu- lation	Births	Deaths	Mar- riages	Rate per 1,000 population		
					Births	Deaths	Mar- riages					Births	Deaths	Mar- riages
Sacramento	83,786	1,783	1,417	1,290	21.3	16.9	15.5	81,549	1,724	1,204	1,145	21.1	14.8	14.0
San Benito	9,069	187	104	109	20.6	11.5	12.0	8,928	174	92	71	19.5	10.3	8.8
San Bernardino	77,712	1,313	1,274	957	16.9	16.4	12.3	74,798	1,492	1,150	821	19.0	15.5	11.0
San Diego	85,617	1,558	1,431	1,670	18.2	16.7	10.7	82,316	1,525	1,488	1,322	18.5	17.5	16.1
San Francisco	471,023	7,877	7,156	6,746	16.7	15.2	14.3	463,817	7,816	7,168	6,981	16.9	15.5	12.9
San Joaquin	61,884	1,268	1,378	1,020	20.9	22.3	16.6	60,337	1,642	1,183	808	18.1	19.6	13.4
San Luis Obispo	21,387	434	284	258	20.3	10.9	12.1	21,100	361	280	211	18.5	10.9	10.0
San Mateo	37,103	514	365	505	13.8	9.8	13.6	35,668	552	387	329	15.5	10.0	9.1
Santa Barbara	34,163	727	449	406	21.3	13.1	11.9	33,273	709	497	240	21.3	12.8	8.7
Santa Clara	100,364	1,655	1,612	1,060	16.5	16.0	10.8	98,262	1,682	1,566	878	17.1	15.9	8.9
Santa Cruz	23,318	415	352	346	14.1	11.9	11.7	23,060	410	365	293	14.1	13.6	10.1
Shasta	50,069	245	249	157	12.2	12.4	7.8	49,927	252	220	147	12.6	11.5	7.4
Sierra	4,157	80	35	14	7.2	8.4	8.4	4,149	35	34	9	8.4	8.2	9.2
Slackyou	20,143	378	258	215	18.8	12.8	10.7	19,167	405	220	171	20.3	11.5	8.6
Solano	30,033	465	375	319	15.5	12.5	10.6	29,707	437	319	271	14.7	10.7	9.1
Sonoma	55,631	745	736	545	18.4	13.2	9.8	54,627	820	680	442	15.0	12.6	8.1
Stanislaus	31,991	719	420	346	22.5	13.1	12.1	30,677	645	378	297	21.0	12.3	9.5
Sutter	6,651	115	96	51	17.3	14.4	7.7	6,606	144	87	81	21.8	13.2	4.7
Tehama	11,697	187	165	121	16.0	14.1	10.3	11,656	213	143	98	18.3	12.3	8.2
Trinity	3,301	22	31	8	6.7	9.4	2.4	3,301	27	38	6	8.2	11.6	1.8
Tulare	47,867	1,006	538	368	21.0	11.2	8.3	46,160	992	442	390	21.5	9.6	9.0
Tuolumne	9,979	86	121	58	8.6	12.1	5.8	9,970	75	120	63	7.5	12.0	6.3
Ventura	21,252	526	345	273	24.8	16.2	12.8	20,549	534	285	188	25.6	13.7	8.8
Yolo	14,151	283	199	156	20.0	14.1	11.0	14,120	282	181	123	20.0	12.8	8.7
Yuba	11,060	158	157	119	14.3	14.2	10.7	10,996	139	158	115	12.7	14.4	10.5

TABLE 4.—Estimated Midyear Population, Births and Deaths, and Rates per 1,000 Population, for Individual Cities of 5,000 in 1910 and Rest of State:

1917 and 1916.

City	Estimated midyear population		Births		Deaths		Rate per 1,000 population			
							Births		Deaths	
	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916
California	3,087,968	2,946,847	52,230	50,688	42,064	39,860	17.2	17.2	13.9	13.5
Cities of 5,000 in 1910..	1,844,785	1,773,690	30,884	29,682	25,370	24,235	16.7	16.7	13.8	13.7
Northern California:										
Eureka	15,142	14,084	251	291	201	233	16.6	19.8	13.3	15.9
Napa	7,072	6,904	125	117	89	103	17.7	17.0	12.6	14.9
Petaluma	7,346	7,143	166	155	146	90	22.6	21.7	19.9	12.6
Santa Rosa	8,652	8,536	152	164	134	151	17.6	19.2	15.5	17.7
Marysville	6,841	6,645	98	77	121	116	14.3	11.6	17.7	17.5
Central California:										
San Francisco	471,023	463,517	7,877	7,816	7,156	7,163	16.7	16.9	15.2	15.5
Alameda	28,433	27,732	417	396	291	261	14.7	14.3	10.2	9.4
Berkeley	60,427	57,653	747	714	478	458	12.4	12.4	7.9	7.9
Oakland	206,405	198,604	3,512	3,067	2,197	2,095	17.0	15.4	10.6	10.5
Richmond	8,949	8,652	311	306	107	134	34.8	35.4	12.0	15.5
San Rafael	7,434	7,226	91	101	91	81	12.2	14.0	12.2	11.2
San Luis Obispo.....	6,716	6,500	162	114	103	101	24.1	17.5	15.3	15.5
San Jose	39,810	38,902	620	725	434	532	15.6	18.7	10.9	13.7
Santa Cruz	15,150	14,594	152	136	103	178	10.0	9.3	11.1	12.2
Fresno	36,314	34,958	687	814	548	398	24.4	23.3	15.1	11.4
Bakersfield	17,543	16,874	490	396	347	362	28.3	23.6	19.8	21.5
Sacramento	68,684	66,805	1,344	1,294	1,220	1,025	19.5	19.3	17.7	15.3
Stockton	36,209	35,358	727	583	901	741	20.1	16.5	24.9	21.0
Vallejo	13,803	13,461	247	208	181	135	17.9	15.5	13.1	10.0
Southern California:										
Los Angeles	535,485	508,812	8,264	7,999	6,717	6,224	15.4	15.9	12.5	12.4
Alhambra	7,859	7,464	112	98	64	87	14.3	13.1	8.1	11.7
Long Beach	29,163	27,587	525	480	514	463	18.0	17.4	17.6	16.8
Pasadena	49,620	46,450	611	590	498	510	12.3	12.7	10.0	11.0
Pomona	13,624	13,150	246	224	148	154	18.1	17.0	10.9	11.7
Santa Monica	11,343	10,858	180	208	187	198	15.9	19.2	16.5	17.8
Santa Ana	10,981	10,627	269	271	184	165	24.5	25.5	16.8	15.5
Riverside	20,496	19,763	282	301	289	291	13.8	15.2	14.1	14.7
Redlands	14,573	14,000	159	166	150	137	10.9	11.9	10.3	9.8
San Bernardino	17,616	16,945	375	425	373	325	21.3	25.1	21.2	19.2
San Diego	56,412	53,830	1,124	1,083	1,048	1,056	19.9	20.3	18.6	19.8
Santa Barbara	15,380	14,846	355	370	285	272	23.1	24.9	18.6	18.8
Rest of State	1,193,183	1,172,687	21,346	20,936	16,714	15,625	17.9	17.9	14.0	13.3

TABLE 5.—Births and Deaths (Exclusive of Stillbirths) Reported for Registration Districts (Cities, Towns and Rural Parts of Counties): 1917 and 1916.

(Cities or incorporated towns not reporting births or deaths omitted from table.)

Registration district	Births		Deaths		Registration district	Births		Deaths	
	1917	1916	1917	1916		1917	1916	1917	1916
California	52,230	50,638	42,484	39,860	Kern County (continued.)	29	18	7	4
Alameda County	5,205	4,638	3,704	3,570	Maricopa	3	1	1	1
Rural	293	270	67	59	McKittick	89	60	38	13
Alameda	417	308	291	267	Taft	5	5	3	3
Albany	26	22	7	7	Tehachapi	388	396	253	208
Berkeley	747	714	478	456	Rural	225	214	114	104
Emeryville	20	14	20	16	Corcoran	12	17	8	2
Hayward	54	42	49	49	Hanford	108	118	111	87
Livermore	43	43	42	39	Lemoore	87	87	20	15
Oakland	3,512	3,067	2,197	2,046	Lake County	86	77	61	71
Piedmont	9	13	20	17	Rural	66	66	46	35
Pleasanton	7	10	6	13	Lakeport	19	19	15	16
San Leandro	84	77	76	66	Lassen County	115	132	68	66
Alpine County	2	3	1	1	Rural	103	132	63	61
Amador County	140	164	141	152	Susanville	12	12	5	5
Rural	62	79	61	71	Los Angeles County	12,726	12,302	10,555	10,088
Amador	8	30	3	7	Rural	1,561	1,550	1,305	1,364
Jackson	26	23	52	53	Alhambra	112	98	64	87
Plymouth	16	16	8	8	Aradria	13	10	6	4
Sutter Creek	28	32	17	21	Avalon	7	2	3	5
Butte County	494	456	415	347	Azusa	67	62	21	32
Rural	332	299	293	186	Beverly Hills	5	3	6	3
Biggs	7	9	4	9	Barbark	68	74	29	20
Chico	81	64	102	87	Claremont	4	13	6	16
Gridley	12	21	19	11	Compton	15	15	24	20
Oroville	79	65	54	42	Covina	23	38	39	28
Calaveras County	91	83	100	76	El Monte	17	16	14	18
Rural	78	66	90	58	El Segundo	10	31	14	21
Angels	18	15	10	18	Glendale	19	108	161	137
Colusa County	142	144	120	91	Glendora	128	108	161	137
Rural	106	117	68	77	Hermosa Beach	27	23	13	10
Colusa	34	27	25	14	Huntington Park	19	20	18	14
Contra Costa County	897	842	454	436	Inglewood	54	47	42	29
Rural	259	243	160	136	La Verne (formerly Lardaburg)	86	86	36	24
Antioch	25	24	21	23	Long Beach	42	39	16	15
Concord	5	5	9	6	Los Angeles	925	480	514	468
El Cerrito	6	6	2	2	Los Angeles	8,294	7,990	6,717	6,234
Hercules	1	3	14	1	Manhattan Beach	8	4	10	5

Martinez	91	94	90	98	Monrovia	78	77	129	129
Pinole	81	25	4	6	Monterey Park	68	7	33	510
Pittsburg	168	131	47	29	Pasadena	611	560	408	154
Richmond	311	306	107	134	Pomona	48	45	148	51
Walnut Creek	3	3	3	3	Redondo Beach	48	45	23	28
Del Norte County	41	43	29	35	San Fernando	73	43	23	33
Rural	21	40	14	18	San Gabriel	41	81	42	2
Grescent City	30	3	14	152	San Marino	3	6	1	183
El Dorado County	106	97	127	67	Santa Monica	180	208	187	68
Placerville	57	45	59	67	Sawtelle	25	38	49	68
Fresno County	48	52	68	55	Sierra Madre	16	11	47	68
Fresno	2,417	2,390	1,844	1,116	South Pasadena	48	43	74	45
Rural	1,295	1,077	685	608	Tropic	43	30	39	31
Coalinga	16	15	8	8	Venice	45	53	67	53
Clovis	124	113	35	29	Vernon	7	1	5	9
Firebaugh	2	7	1	16	Walla Walla	44	55	84	33
Forster	30	24	23	15	Whittier	112	101	86	74
Fresno	867	814	548	398	Madera County	225	213	114	115
Kingsburg	23	19	17	14	Rural	144	129	83	175
Redley	37	38	22	14	Madera	82	84	31	40
Sanger	49	44	33	9	Marin County	234	294	321	264
Seima	36	29	24	23	Rural	64	107	136	123
Glenn County	168	139	66	76	Belvedere	10	12	4	6
Rural	112	107	50	55	Corte Madera	3	7	7	14
Orland	35	14	5	5	Larkspur	1	2	3	3
Willows	21	18	11	16	Mill Valley	21	37	19	6
Humboldt County	580	601	392	422	Ross	12	7	11	12
Rural	226	213	144	141	San Anselmo	91	91	81	81
Arcata	56	35	22	21	San Rafael	33	22	22	20
Blue Lake	8	13	7	7	Sausalito	36	39	39	41
Eureka	251	291	201	233	Mariposa County	354	387	325	359
Ferdale	23	23	12	10	Mendocino County	210	236	223	249
Fortuna	22	23	6	10	Rural	44	54	49	63
Imperial County	590	568	319	319	Fort Bragg	12	7	3	2
Rural	202	187	132	94	Point Arena	8	7	5	2
Brawley	75	58	36	43	Potter Valley	39	34	26	30
Calexico	108	86	62	43	Ukiah	41	49	19	13
El Centro	100	94	111	112	Willits	361	373	182	200
Holtville	47	23	19	19	Merced County	284	290	126	154
Imperial	63	53	30	18	Rural	2	7	2	8
Inyo County	90	28	54	45	Gustine	29	28	16	14
Rural	16	22	37	30	Los Banos	42	53	38	29
Blahop	4	6	17	15	Merced	104	110	44	41
Kern County	988	827	548	544	Modoc County	92	100	85	81
Rural	336	182	132	174	Rural	12	10	9	10
Bakersfield	496	396	347	362	Alturas	6	7	4	9
Delano	10	9	1	5	Mono County				

TABLE 5.—Births and Deaths (Exclusive of Stillbirths) Reported for Registration Districts (Cities, Towns and Rural Parts of Counties): 1917 and 1916—Continued.
(Cities or incorporated towns not reporting births or deaths omitted from table.)

Registration district	Births		Deaths		Registration district		Births		Deaths	
	1917	1916	1917	1916			1917	1916	1917	1916
Monterey County	461	449	337	325	San Mateo County—Continued.					
Rural	217	226	136	138	Hillborough		2	2	4	6
King City	27	11	11	6	Redwood City		51	51	40	47
Monterey	109	113	65	67	San Bruno		20	22	8	11
Pacific Grove	18	49	12	45	San Mateo		130	111	83	68
Salinas	90	87	80	66	South San Francisco		69	61	33	48
Napa County	233	217	546	331	San Jose		727	709	449	427
Rural	83	70	418	389	San Jose		226	215	98	97
Calistoga	12	22	15	11	Lompoc		55	46	22	20
Napa	125	117	89	103	Santa Barbara		335	370	255	272
St. Helena	13	8	24	28	Santa Maria		91	78	44	38
Nevada County	177	198	205	214	Santa Clara County		1,655	1,682	1,612	1,566
Rural	65	73	99	104	Rural		769	717	997	832
Grass Valley	73	80	67	67	Gilroy		65	59	47	46
Nevada City	39	43	39	43	Los Gatos		27	35	43	25
Orange County	1,061	1,028	652	584	Mayfield		10	10	15	12
Rural	506	566	253	224	Morgan Hill		15	10	15	7
Anaheim	99	113	94	74	Mountain View		21	12	17	12
Pala	8		1		Palo Alto		56	46	30	39
Fullerton	70	61	34	25	San Jose		695	726	434	532
Huntington Beach	38	36	21	22	Santa Clara		53	49	49	50
Newport Beach	12	4	10		San Jose		17	22	5	11
Orange	56	37	47	54	Sunnyvale		415	410	302	386
Seal Beach	260	271	184	165	Rural		101	125	98	124
Stanton	2	1	2		Santa Cruz		132	136	168	178
Placer County	354	347	253	239	Watsonville		162	149	86	83
Rural	161	190	99	102	Shasta County		245	252	249	229
Auburn	56	38	88	71	Rural		137	163	160	150
Colfax	12	7	25	24	Kennett		42	25	18	18
Lincoln	32	31	9	6	Redding		66	61	71	66
Rocklin	8	9	6	6	Sierra County		30	35	35	34
Roseville	85	72	31	27	Rural		22	25	29	30
Plumas County	61	81	83	61	Loyalton		8	10	6	4
Riverside County	481	731	582	556	Shakyou County		378	405	258	229
Rural	185	222	100	95	Rural		223	270	132	125
Banning	31	15	47	44	Dorris		10	5	11	4
Beaumont	14	15	21	15	Dunsmuir		69	64	26	22
Hythe	15	7	19	14	Etna		17	13	11	6
					Fort Jones					

Corona	89	130	73	60	Montague	15	12	5	2
Elmore	12	10	9	17	Siscon	25	16	6	12
Hemet	12	4	9	2	Yreka	32	35	66	32
Perris	27	12	8	7	Solano County	465	437	375	319
Riverside	282	301	289	291	Rural	113	19	86	97
San Jacinto	14	15	7	11	Benicia	27	14	42	21
Sacramento County	1,783	1,724	1,417	1,204	Dixon	5	15	10	10
Rural	439	430	197	178	Fairfield	12	6	7	15
Sacramento	1,344	1,294	1,220	1,028	Rio Vista	6	9	15	12
San Benito County	187	174	104	92	Suisun	7	10	7	5
Rural	115	96	53	44	Vacaville	48	49	24	24
Hollister	64	67	42	39	Vallejo	247	208	181	135
San Juan	8	11	9	9	Sonoma County	745	820	786	689
San Bernardino County	1,313	1,422	1,274	1,150	Rural	324	393	377	372
Rural	315	335	468	414	Cloverdale	20	15	12	20
Chino	101	80	54	41	Healdsburg	48	39	35	29
Colton	110	143	73	86	Petaluma	160	155	146	90
Needles	46	75	44	40	Santa Rosa	152	164	134	151
Ontario	126	129	79	84	Sebastopol	22	35	11	14
Redlands	150	166	150	137	Sonoma	13	16	21	13
Rialto	9	8	3	11	Stanislaus County	719	645	420	378
San Bernardino	375	425	373	325	Rural	383	345	183	149
Upland	72	61	30	21	Modesto	189	169	161	143
San Diego County	1,558	1,525	1,431	1,438	Newman	14	16	19	16
Rural	188	206	183	156	Oakdale	47	42	19	34
Chula Vista	35	20	20	28	Turlock	136	73	38	36
Coronado	26	24	24	28	Rural	115	144	96	87
East San Diego	58	56	32	44	Sutter County	94	128	80	75
El Cajon	13	22	5	3	Rural	21	16	16	12
Escondido	41	35	31	28	Yuba City	187	213	165	143
La Mesa	11	7	18	24	Tehama County	70	90	80	80
National City	60	56	53	55	Rural	27	24	21	15
Oceanside	8	16	17	24	Corning	84	92	61	37
San Diego	1,124	1,063	1,043	1,060	Red Bluff	7	7	3	11
San Francisco (city and county)	7,877	7,816	7,156	7,183	Tehama	22	27	31	38
San Joaquin County	1,263	1,092	1,378	1,183	Trinity County	1,006	992	538	442
Rural	446	407	401	390	Tulare County	601	601	264	226
Lodi	88	70	50	37	Rural	41	40	31	24
Stockton	727	583	901	741	Dinuba	41	30	18	16
Tracy	32	32	20	6	Exeter	41	80	17	10
San Luis Obispo County	434	391	284	230	Lindsay	98	88	64	49
Rural	197	197	75	61	Porterville	55	63	46	37
Arroyo Grande	11	16	23	25	Tulare	90	105	98	80
Paso de Robles	64	60	33	43	Visalia	86	75	121	120
San Luis Obispo	162	114	108	101	Tuolumne County	37	68	87	117
San Mateo County	514	532	365	357	Rural	7	7	34	3
Rural	165	219	147	131	Sonoma	526	534	345	285
Burlingame	29	35	26	20	Ventura County	125	156	94	92
Daly City	40	51	24	26	Rural	41	41	18	15
					Fillmore				

TABLE 5.—Births and Deaths (Exclusive of Stillbirths) Reported for Registration Districts (Cities, Towns and Rural Parts of Counties):
1917 and 1916—Continued.

(Cities or incorporated towns not reporting births or deaths omitted from table.)

Registration district	Births		Deaths		Registration district	Births		Deaths	
	1917	1916	1917	1916		1917	1916	1917	1916
Ventura County—Continued.									
Oxnard	206	166	100	53	Yolo County—Continued.	18	16	14	10
Santa Paula	81	88	53	50	Winters	92	86	65	46
Santa Paula	73	83	80	75	Woodland	156	139	157	158
Ventura	283	282	199	181	Yuba County	59	61	86	37
Yolo County	162	180	112	125	Rural	98	77	121	116
Rural	11		8		Marysville	1	1		5
Davis					Wheatland				

II. Births.

The 52,230 babies in 1917 included 27,888 boys and 25,342 girls, while of the 50,638 in 1916 the males were 26,172 and the females 24,466.

The race distribution of births in 1917 was: White, 47,313; Japanese, 4,108; Chinese, 419; Negro, 328; and Indian, 62.

The figures for 1916 were: White, 46,272; Japanese, 3,721; Chinese, 425; Negro, 199; and Indian, 21.

The per cent white decreased steadily through the past twelve years, thus: 98.4 (1906), 97.7, 96.8, 96.3, 96.1, 95.5, 94.6, 93.2, 91.9, 91.3, 91.4 and 90.6 (1917).

The decrease in the proportion of white babies is due to marked increases in Japanese birth registrations as follows: 134 (1906), 221, 455, 682, 719, 995, 1,467, 2,215, 2,874, 3,342, 3,721 and 4,108 (1917).

TABLE 6.—Births Classified by Sex and Race.

County	Total live births	Male	Female	White			Negro	Indian
				Total	Male	Female		
California	52,220	27,868	25,352	47,213	24,319	22,894	335	62
Alameda	5,395	2,672	2,533	4,885	2,449	2,379	45	—
Alpine	2	1	1	2	1	1	—	—
Amador	180	71	69	140	71	69	—	—
Butte	494	252	242	467	249	227	—	2
Calaveras	91	53	36	91	53	36	—	—
Colusa	142	71	71	120	62	66	—	—
Contra Costa	897	459	447	854	425	429	1	—
Del Norte	41	21	20	41	21	20	—	—
El Dorado	105	51	54	102	50	52	—	—
Fresno	2,417	2,267	1,150	2,075	1,074	1,001	6	1
Glenn	168	87	81	168	85	78	—	—
Humboldt	540	308	272	540	294	265	—	30
Imperial	540	300	290	512	261	251	11	—
Inyo	30	11	9	19	10	9	—	—
Kern	958	491	467	923	478	445	7	—
Kings	398	198	190	350	179	171	1	—
Lake	85	42	43	81	39	42	—	3
Lassen	115	60	46	115	60	46	—	—
Los Angeles	12,726	6,408	6,228	11,240	5,759	5,480	100	7
Madera	226	117	109	222	115	107	1	1
Marin	234	123	111	221	122	109	—	—
Mariposa	32	22	10	32	22	10	—	—
Mendocino	354	195	159	351	198	158	—	—
Merced	361	190	171	351	185	166	—	—
Modoc	104	53	51	101	51	50	—	3
Mono	6	2	4	6	2	4	—	—
Monterey	461	234	227	364	189	175	2	—
Napa	233	106	127	232	105	127	—	—
Nevada	177	90	78	171	95	76	—	—
Orange	1,061	575	486	984	531	453	3	—
Placer	354	189	174	260	130	130	1	—
Plumas	61	32	29	59	30	29	—	—
Riverside	681	337	344	640	315	325	5	1
Sacramento	1,783	915	868	1,311	668	643	11	—
San Benito	187	100	87	145	79	66	—	—
San Bernardino	1,313	648	665	1,202	622	640	4	3
San Diego	1,558	841	717	1,485	808	682	13	1
San Francisco	7,877	4,043	3,884	7,404	3,809	3,595	27	—
San Joaquin	1,263	704	589	1,041	569	472	3	1
San Luis Obispo	434	223	211	418	212	206	—	—
San Mateo	514	238	276	488	229	259	2	—
Santa Barbara	727	365	342	658	345	313	3	—
Santa Clara	1,655	841	814	1,449	732	717	1	—
Santa Cruz	415	218	197	347	180	167	—	—
Shasta	245	127	118	241	125	116	1	2
Sierra	30	13	17	30	18	17	—	—
Siskiyou	378	175	203	376	175	201	1	—
Solano	465	247	218	381	208	188	8	—
Sonoma	745	376	369	701	357	344	—	5
Stanislaus	719	379	340	666	367	329	1	—
Sutter	115	63	52	98	54	44	—	—
Tehama	187	88	99	178	85	93	1	2
Trinity	22	11	11	22	11	11	—	—
Tulare	1,006	531	475	947	500	447	2	—
Tuolumne	86	41	45	86	41	45	—	—
Ventura	526	266	260	484	246	238	1	—
Yolo	283	156	127	225	118	107	—	—
Yuba	158	81	77	130	66	64	2	—

and by Sex and Maternal Nativity, for Counties: 1917.

Chinese	Japanese	White children with mothers								
		Born in California			Born in other states			Foreign born		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
419	4,108	15,780	8,061	7,719	18,090	9,408	8,682	13,443	6,850	6,593
52	277	2,028	1,008	1,025	1,487	772	715	1,313	674	639
		1		1	1	1				
		69	38	31	20	9	11	51	24	27
2	23	214	106	108	196	110	86	57	24	33
		55	37	18	20	9	11	16	7	9
1	11	83	37	46	37	19	18	10	6	4
	42	222	130	146	186	97	89	386	192	194
		15	10	5	15	7	8	11	4	7
	3	75	38	37	14	9	5	13	3	10
12	323	496	254	232	355	450	405	734	370	364
1	4	76	39	37	63	34	29	24	12	12
		291	158	133	115	64	51	143	72	71
	67	56	28	28	334	165	169	122	68	54
	1	6	4	2	12	6	6	1		1
7	21	216	107	109	529	292	237	178	79	99
7	30	118	65	53	126	60	66	106	54	52
	1	50	23	27	23	10	13	8	6	2
		53	34	19	42	26	16	20	9	11
45	1,265	1,890	933	927	6,361	3,318	3,043	3,028	1,508	1,520
1	1	78	37	41	75	38	37	69	40	29
1	2	110	58	52	38	18	20	83	46	37
		23	15	8	7	5	2	2	2	
	3	196	102	94	76	42	34	79	49	30
	10	118	61	57	97	45	52	136	79	57
		65	35	30	30	14	16	6	2	4
	4			4	1	1		1	1	
4	91	209	112	97	68	33	35	87	44	43
	1	144	60	78	50	23	27	38	16	22
2	4	106	59	47	32	17	15	33	19	14
	74	222	121	101	532	280	252	230	130	100
2	91	109	54	55	80	47	33	71	29	42
	2	34	16	18	16	10	6	9	4	5
	35	130	55	75	361	188	173	149	72	77
41	420	604	323	281	399	196	203	308	149	159
4	38	80	41	39	25	12	13	40	26	14
	44	233	105	128	623	322	301	406	195	211
5	54	316	163	153	796	437	359	373	203	170
183	263	3,153	1,643	1,510	1,431	721	710	2,820	1,445	1,375
11	237	496	274	222	325	172	153	220	123	97
	16	222	116	106	118	57	61	78	39	39
5	19	189	81	108	80	44	36	219	104	115
4	62	266	143	123	203	95	108	189	107	82
10	195	582	276	306	369	190	179	498	268	232
5	63	171	86	85	97	49	48	79	45	34
1		129	65	64	68	37	31	44	23	21
		21	10	11	6	3	3	3		3
	1	146	68	78	124	64	60	106	43	63
3	58	189	92	97	104	56	48	103	60	43
2	37	345	179	166	161	87	74	195	91	104
1	21	219	121	98	319	158	161	158	88	70
	17	50	27	23	29	17	12	19	10	9
2	4	86	43	43	70	36	43	13	6	7
		19	9	10	2	2		1		1
	57	262	142	120	510	265	245	175	93	82
		56	25	31	19	9	10	11	7	4
	41	153	80	73	207	104	103	124	62	62
1	57	132	69	63	60	32	28	33	17	16
4	22	79	39	40	37	24	13	14	3	11

TABLE 7.—Births Classified by Sex and Race.

County	Total live births	Male	Female	White			Negro	Indian
				Total	Male	Female		
California	50,688	26,172	24,496	46,272	22,928	22,344	190	21
Alameda	4,658	2,366	2,292	4,311	2,188	2,123	10	.....
Alpine	3	1	2	3	1	2	.....	.....
Amador	164	84	80	163	84	79	.....	.....
Butte	456	236	220	440	227	213	.....	.....
Calaveras	83	40	43	83	40	43	.....	.....
Colusa	144	77	67	134	70	64	.....	1
Contra Costa	842	439	403	811	423	388	.....	.....
Del Norte	43	22	21	43	22	21	.....	.....
El Dorado	97	52	45	95	50	45	.....	.....
Fresno	2,180	1,186	994	1,962	1,004	958	9	.....
Glenn	139	72	67	137	72	65	.....	.....
Humboldt	601	294	307	587	288	299	1	13
Imperial	548	281	227	466	262	204	6	.....
Inyo	28	12	16	25	10	15	.....	.....
Kern	827	429	398	797	430	377	2	.....
Kings	386	187	199	348	170	178	3	.....
Lake	77	39	38	76	38	38	.....	.....
Lassen	132	70	62	131	70	61	.....	.....
Los Angeles	12,302	6,263	6,039	11,010	5,568	5,442	124	1
Madera	213	109	104	210	108	102	.....	.....
Marin	294	143	151	280	139	150	.....	.....
Mariposa	36	18	18	36	18	18	.....	.....
Mendocino	387	206	182	379	201	178	.....	.....
Merced	373	192	181	361	187	174	.....	.....
Modoc	110	66	44	108	65	43	.....	2
Mono	7	4	3	7	4	3	.....	.....
Monterey	449	243	206	341	175	166	1	.....
Napa	217	112	105	214	111	103	.....	.....
Nevada	198	116	82	192	114	78	.....	.....
Orange	1,028	531	497	940	486	454	2	.....
Placer	347	178	171	257	130	127	.....	2
Plumas	81	32	49	78	30	48	.....	.....
Riverside	731	368	363	670	359	331	9	.....
Sacramento	1,724	914	810	1,309	694	615	4	1
San Benito	174	88	86	142	72	70	.....	.....
San Bernardino	1,422	722	700	1,308	707	606	.....	.....
San Diego	1,525	786	739	1,468	759	709	4	.....
San Francisco	7,816	4,082	3,734	7,298	3,827	3,471	13	.....
San Joaquin	1,062	571	521	913	478	435	3	.....
San Luis Obispo	391	206	185	377	197	180	.....	.....
San Mateo	552	290	256	531	284	247	.....	.....
Santa Barbara	709	370	339	642	327	315	1	.....
Santa Clara	1,682	879	803	1,489	784	705	2	.....
Santa Cruz	410	234	176	331	189	142	.....	.....
Shasta	252	130	122	250	130	120	1	1
Sierra	35	17	18	35	17	18	.....	.....
Siskiyou	465	193	212	405	198	212	.....	.....
Solano	437	236	201	379	206	173	1	.....
Sonoma	820	412	408	769	383	386	.....	.....
Stanislaus	645	330	315	633	323	310	1	.....
Sutter	144	75	69	120	62	58	.....	.....
Tehama	213	103	110	204	97	107	.....	.....
Trinity	27	8	19	27	8	19	.....	.....
Tulare	992	513	479	982	479	453	2	.....
Tuolumne	75	37	38	75	37	38	.....	.....
Ventura	534	285	249	496	269	227	.....	.....
Yolo	262	150	132	235	122	113	.....	.....
Yuba	139	70	60	115	55	60	.....	.....

and by Sex and Maternal Nativity, for Counties: 1916.

Chinese	Japanese	White children with mothers								
		Born in California			Born in other states			Foreign born		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
425	3,721	15,196	7,845	7,351	17,765	9,132	8,633	13,311	6,951	6,361
48	289	1,824	913	911	1,299	670	629	1,188	605	583
		1		1				2	1	1
	1	82	43	39	25	11	14	56	30	26
2	14	191	103	88	203	103	100	46	21	25
		53	23	30	19	13	6	11	4	7
2	7	82	43	39	29	16	13	23	11	12
	31	267	146	121	191	106	85	353	171	182
		17	8	9	16	7	9	10	7	3
	2	53	29	24	31	13	18	11	8	3
6	203	470	261	209	303	125	178	689	408	281
	2	55	24	31	50	35	15	23	13	10
		289	137	152	122	56	66	176	95	81
	36	57	39	18	313	178	135	96	45	51
	3	9	4	5	12	5	7	4	1	3
9	19	225	114	111	437	235	202	135	71	64
7	28	110	45	65	145	73	72	93	52	41
	1	51	23	28	19	14	5	6	1	5
	1	66	34	32	42	26	16	23	10	13
21	1,146	1,689	872	817	6,338	3,192	3,146	2,963	1,529	1,434
	3	80	42	38	60	36	24	70	30	40
1	4	126	53	73	57	29	28	106	57	49
		23	12	11	11	5	6	2	1	1
1	7	206	111	97	66	30	36	105	60	45
2	10	118	56	62	104	56	48	139	75	64
		67	38	29	36	24	12	5	3	2
		3	2	1	3	2	1	1		1
7	100	188	101	87	69	38	31	84	36	48
	3	104	53	51	53	30	23	57	28	29
4	2	107	62	45	36	20	16	49	32	17
	86	207	105	102	527	273	254	206	108	98
3	85	104	54	50	89	45	44	64	31	33
2	1	41	13	28	32	15	17	5	2	3
3	49	136	78	63	362	175	187	172	91	81
38	372	611	327	284	372	189	183	326	178	148
3	29	88	42	46	22	16	6	32	14	18
	29	255	137	118	761	381	380	377	189	188
5	48	291	155	136	811	422	389	366	182	184
20	290	3,041	1,580	1,461	1,289	678	611	2,068	1,569	1,399
12	164	444	234	210	286	150	136	188	94	80
	14	206	104	102	114	62	52	57	31	26
4	17	205	114	91	80	39	41	246	131	115
4	62	290	166	124	206	93	113	146	68	78
16	175	565	287	278	389	208	181	535	280	246
5	74	156	84	71	96	60	36	80	45	35
		127	62	65	72	39	33	51	29	22
		23	12	11	6	3	3	6	2	4
		158	70	88	128	63	65	119	60	59
5	52	191	113	78	99	48	51	80	45	44
4	47	364	181	184	182	91	91	223	112	111
1	10	176	85	91	319	163	156	138	75	63
	24	67	39	28	35	14	21	18	9	9
	9	109	46	63	77	41	36	18	10	8
		22	7	15				5	1	4
1	57	264	140	124	511	256	255	157	83	74
		48	27	21	14	4	10	13	6	7
2	36	197	102	95	188	104	84	111	63	48
	47	121	58	63	73	40	33	41	24	17
1	23	75	38	37	27	12	15	13	5	8

TABLE 8.—Births Classified by Sex and Race.

City	Total live births	Male	Female	White			Negro	Indian
				Total	Male	Female		
California	52,230	27,868	25,342	47,514	24,320	22,904	328	62
Cities of 5,000 in 1910.....	30,884	15,860	15,034	28,614	14,675	13,969	262	11
Northern California—								
Eureka	251	142	109	250	142	108	1	
Napa	125	57	68	124	56	68		
Petaluma	166	79	87	165	78	87		1
Santa Rosa	152	81	71	146	79	67		1
Marysville	98	55	43	76	43	33	2	
Central California								
San Francisco	7,877	4,643	3,834	7,404	3,809	3,595	27	
Alameda	417	213	204	370	185	185	3	
Berkeley	747	404	343	686	365	321	5	
Oakland	3,512	1,784	1,728	3,200	1,661	1,638	38	
Richmond	311	154	157	301	148	153		
San Rafael	91	47	46	89	44	45		
San Luis Obispo	102	85	77	158	84	74		
San Jose	620	308	312	574	286	288	1	
Santa Cruz	152	77	75	149	76	73		
Fresno	887	465	422	811	425	386	5	
Bakersfield	496	245	251	478	238	240	5	
Sacramento	1,344	695	649	1,138	580	558	10	
Stockton	727	402	325	641	352	289	3	1
Vallejo	247	130	117	234	123	111	8	
Southern California—								
Los Angeles	8,264	4,186	4,078	7,480	3,842	3,678	142	6
Alhambra	112	54	58	111	53	58		
Long Beach	527	261	261	495	247	248	1	
Pasadena	611	348	263	585	335	250	7	
Pomona	246	142	104	245	141	104		
Santa Monica	180	88	92	172	86	86	4	
Santa Ana	209	131	138	264	129	135		
Riverside	282	143	139	255	128	127	3	
Redlands	159	72	87	151	68	83		1
San Bernardino	375	173	202	357	166	192	3	1
San Diego	1,124	611	513	1,075	583	492	11	
Santa Barbara	355	174	181	331	164	167	3	
Rest of State.....	21,346	11,038	10,308	18,700	9,645	9,055	46	51

and by Sex and Maternal Nativity, for Cities: 1917.

Chinese	Japanese	White children with mothers								
		Born in California			Born in other states			Foreign born		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
419	4,107	15,780	8,061	7,719	18,000	9,406	8,592	13,444	6,851	6,593
333	1,644	9,259	4,731	4,528	10,958	5,689	5,269	8,397	4,256	4,142
-----	-----	140	79	61	58	34	24	52	29	23
-----	1	76	35	41	30	14	16	18	7	11
-----	-----	76	38	38	27	14	13	62	26	36
1	4	68	37	31	49	29	20	29	13	16
4	16	42	22	20	28	20	8	6	1	5
183	263	3,153	1,643	1,510	1,431	721	710	2,820	1,445	1,375
2	42	168	84	84	108	48	60	94	53	41
4	52	304	155	149	241	132	109	141	78	63
46	120	1,336	661	675	1,652	544	508	911	456	455
-----	10	114	58	56	101	50	51	86	40	46
-----	2	51	23	28	9	3	6	29	18	11
-----	4	85	47	38	50	26	24	23	11	12
3	42	238	120	118	121	57	72	207	101	106
-----	3	75	38	37	41	19	22	33	19	14
10	61	226	116	110	293	158	135	292	151	141
3	10	123	56	67	240	137	103	115	45	70
14	182	523	281	242	348	170	178	267	129	138
10	72	331	183	148	180	93	87	130	76	54
1	4	126	58	68	69	30	39	39	26	13
44	502	1,220	617	612	4,126	2,132	1,994	2,125	1,053	1,072
-----	1	28	15	13	65	28	37	18	10	8
-----	29	61	29	32	342	176	166	92	42	50
-----	19	64	39	25	410	238	172	111	58	53
-----	1	43	23	20	165	93	72	37	25	12
-----	4	38	13	25	101	58	43	33	15	18
-----	5	57	30	27	150	72	78	57	27	30
-----	24	49	21	28	158	81	77	48	26	22
-----	7	36	13	23	90	43	43	29	12	17
-----	14	75	30	45	184	89	95	98	46	52
5	33	208	107	101	576	321	255	291	155	136
3	18	116	60	56	111	50	61	104	54	50
86	2,468	6,521	3,330	3,191	7,132	3,719	3,413	5,047	2,596	2,451

TABLE 9.—Births Classified by Sex and Race.

City	Total live births	Male	Female	White			Negro	Indian
				Total	Male	Female		
California	50,638	26,172	24,466	46,272	22,928	22,344	190	21
Cities of 5,000 in 1910.....	29,682	15,202	14,380	27,632	14,282	12,370	160	2
Northern California—								
Eureka	291	144	147	290	144	146	1	—
Napa	117	70	47	115	69	46	—	—
Petaluma	155	80	75	153	79	74	—	—
Santa Rosa	164	87	77	160	84	76	—	—
Marysville	77	42	35	62	31	31	—	—
Central California—								
San Francisco	7,816	4,082	3,734	7,298	3,827	3,471	13	—
Alameda	396	196	200	351	174	177	—	—
Berkeley	714	366	348	650	330	320	1	—
Oakland	3,057	1,561	1,496	2,870	1,468	1,402	7	—
Richmond	306	160	146	302	159	143	—	—
San Rafael	101	46	55	99	44	55	—	—
San Luis Obispo.....	114	55	59	113	55	58	—	—
San Jose	726	388	338	679	365	314	—	—
Santa Cruz	136	75	61	134	75	59	—	—
Fresno	814	429	385	759	398	361	4	—
Bakersfield	398	207	191	376	199	177	2	—
Sacramento	1,294	695	599	1,117	597	520	4	1
Stockton	583	297	286	580	297	283	2	—
Vallejo	208	115	93	196	105	91	1	—
Southern California—								
Los Angeles	7,969	4,041	3,928	7,324	3,712	3,612	111	1
Alhambra	98	49	49	96	47	49	—	—
Long Beach	480	264	216	460	252	208	1	—
Pasadena	590	303	287	562	290	272	7	—
Pomona	224	104	120	220	108	112	1	—
Santa Monica	208	111	97	201	106	95	—	—
Santa Ana	271	138	133	264	134	130	—	—
Riverside	301	154	147	256	134	122	9	—
Redlands	166	81	85	159	78	81	—	—
San Bernardino	425	223	202	417	221	196	—	—
San Diego	1,063	542	541	1,047	528	519	4	—
Santa Barbara	370	187	183	354	177	177	1	—
Rest of state.....	20,956	10,890	10,076	18,650	9,676	8,974	30	19

and by Sex and Maternal Nativity, for Cities: 1916.

Chinese	Japanese	White children with mothers								
		Born in California			Born in other states			Foreign born		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
425	3,721	15,196	7,845	7,351	17,765	9,132	8,633	13,311	6,951	6,360
331	1,568	8,687	4,493	4,194	10,565	5,412	5,153	8,370	4,347	4,023
-----	-----	154	74	80	60	27	33	76	43	33
-----	2	60	35	25	31	19	12	24	15	9
-----	2	68	33	35	37	20	17	48	26	22
1	3	81	41	40	46	24	22	33	19	14
1	14	44	22	22	10	6	4	8	3	5
206	299	3,041	1,580	1,461	1,289	678	611	2,968	1,569	1,399
-----	45	177	86	91	87	44	43	87	44	43
1	56	280	128	154	244	124	120	182	80	102
46	128	1,175	609	566	892	461	431	809	398	411
-----	4	100	51	49	92	54	38	110	54	56
-----	2	51	20	31	16	6	10	32	18	14
-----	1	69	30	39	38	18	15	11	7	4
6	41	229	124	105	153	80	73	297	161	136
2	-----	58	30	28	50	32	18	26	13	13
2	49	210	119	91	316	157	159	233	122	111
7	13	126	63	63	184	101	83	66	35	31
16	156	526	283	243	318	159	159	273	155	118
11	44	277	147	130	145	69	76	104	51	53
4	7	108	56	47	61	30	31	32	19	13
19	544	1,110	570	540	4,062	2,057	2,005	2,152	1,085	1,067
-----	2	17	9	8	66	32	34	13	6	7
-----	19	57	33	24	339	180	159	64	39	25
-----	21	61	34	27	387	192	195	114	64	50
-----	3	35	14	21	157	72	85	28	17	11
-----	7	27	17	10	139	73	66	35	16	19
-----	7	56	21	35	155	81	74	53	32	21
3	33	45	27	18	136	75	61	75	32	43
-----	7	29	14	15	105	54	51	25	10	15
-----	8	96	58	38	218	109	109	103	54	49
5	27	190	92	98	598	311	287	259	125	134
1	14	135	75	60	139	67	72	30	35	45
94	2,168	6,609	3,352	3,157	7,200	3,720	3,480	4,941	2,604	2,337

TABLE 10.—Mothers Classified by Race and Nativity, with Per Cent

County	Mothers, 1917					Non-Cau- casian	Total
	Total	White			Foreign born		
		Total	Born in California	Born in other states			
California	52,230	47,313	15,780	18,000	13,443	4,917	50,635
Alameda	5,206	4,828	2,088	1,487	1,313	877	4,658
Alpine	2	2	1	1			3
Amador	140	140	69	20	51		164
Butte	494	467	214	196	57	27	456
Calaveras	91	91	55	20	16		83
Colusa	142	130	83	37	10	12	144
Contra Costa	897	864	282	186	386	43	842
Del Norte	41	41	15	15	11		43
El Dorado	105	102	75	14	13	3	97
Fresno	2,417	2,075	486	865	784	342	2,180
Glenn	166	163	76	63	24	5	139
Humboldt	580	549	291	115	143	31	601
Imperial	599	512	56	334	122	78	568
Inyo	20	19	6	12	1	1	26
Kern	954	923	316	529	178	35	827
Kings	288	350	118	126	106	38	386
Lake	85	81	50	23	8	4	77
Lassen	115	115	53	42	20		132
Los Angeles	12,726	11,249	1,860	6,361	3,028	1,477	12,302
Madera	226	222	78	75	69	4	213
Marin	224	231	110	38	83	3	294
Mariposa	32	32	23	7	2		36
Mendocino	354	351	196	76	79	3	387
Merced	361	351	118	97	136	10	373
Modoc	104	101	65	30	6	3	110
Mono	6	6	4	1	1		7
Monterey	461	364	209	68	87	97	449
Napa	223	232	144	60	38	1	217
Nevada	177	171	106	32	33	6	196
Orange	1,061	964	322	532	230	77	1,098
Placer	354	200	109	80	71	94	347
Plumas	61	59	34	16	9	2	81
Riverside	681	640	130	361	149	41	731
Sacramento	1,788	1,311	604	399	308	472	1,724
San Benito	187	145	80	25	40	42	174
San Bernardino	1,313	1,262	233	623	406	51	1,422
San Diego	1,558	1,485	316	796	373	73	1,525
San Francisco	7,877	7,404	3,153	1,481	2,820	473	7,816
San Joaquin	1,298	1,041	496	325	220	252	1,092
San Luis Obispo	484	418	222	118	78	16	391
San Mateo	511	488	189	80	219	26	552
Santa Barbara	727	658	266	203	189	69	709
Santa Clara	1,655	1,449	582	369	498	206	1,662
Santa Cruz	415	347	171	97	79	68	410
Shasta	245	241	129	68	44	4	252
Sierra	30	30	21	6	3		35
Siskiyou	378	376	146	124	106	2	405
Solano	465	396	189	104	108	69	437
Sonoma	745	701	345	161	195	44	830
Stanislaus	719	606	219	319	158	23	645
Sutter	115	98	50	29	19	17	144
Tehama	187	178	86	79	13	9	213
Trinity	22	22	19	2	1		27
Tulare	1,006	947	262	510	175	59	992
Tuolumne	86	86	56	19	11		75
Ventura	526	484	183	207	124	43	534
Yolo	283	225	132	60	83	58	282
Yuba	155	130	79	37	14	28	139

Distribution of White Mothers by Nativity, for Counties: 1917 and 1916.

Mothers, 1916					Per cent of white mothers					
Total	White		Foreign born	Non-Cau- casian	Born in California		Born in other states		Foreign born	
	Born in California	Born in other states			1917	1916	1917	1916	1917	1916
46,272	15,196	17,765	13,311	4,366	33.4	32.8	38.2	38.4	28.4	28.8
4,311	1,824	1,299	1,188	347	42.0	42.3	30.8	30.1	27.2	27.6
8	1		2		50.0	33.3	50.0			66.7
163	82	25	56	1	49.3	50.3	14.3	15.3	36.4	34.4
440	191	203	46	16	45.8	43.4	42.0	46.1	12.2	10.5
83	53	19	11		60.4	63.9	22.0	22.9	17.6	13.2
134	82	29	23	10	63.8	61.2	28.5	21.4	7.7	17.2
811	267	191	353	31	33.0	32.0	21.8	23.6	45.2	43.5
48	17	16	10		36.6	39.5	36.6	37.2	26.8	23.3
95	53	31	11	2	73.5	56.8	13.7	32.6	12.8	11.6
1,962	470	803	689	218	23.4	24.0	41.2	40.9	35.4	35.1
137	55	59	23	2	46.6	40.1	38.7	43.1	14.7	16.8
587	289	122	176	14	53.0	49.2	20.9	20.8	26.1	30.0
466	57	313	96	42	10.9	12.2	65.3	67.2	23.8	20.6
25	9	12	4	3	31.6	36.0	63.1	48.0	5.3	16.0
797	235	437	135	30	23.4	28.2	57.3	54.8	19.3	17.0
348	110	145	93	38	33.7	31.6	36.0	41.7	30.3	26.7
76	51	19	6	1	61.7	67.1	28.4	25.0	9.9	7.9
131	66	42	23	1	46.1	50.4	36.5	32.1	17.4	17.5
11,010	1,689	6,338	2,963	1,292	16.5	15.3	56.6	57.6	26.9	27.1
210	80	60	70	3	35.1	38.1	33.3	28.6	31.1	33.3
289	126	57	106	5	47.6	43.6	16.5	19.7	35.9	36.7
30	23	11	2		71.9	63.9	21.9	30.6	6.2	5.5
379	208	66	105	8	55.8	54.9	21.7	17.4	22.5	27.7
361	118	104	139	12	33.6	32.7	27.6	28.8	38.8	38.5
108	67	36	5	2	64.4	62.1	29.7	33.3	5.9	4.6
7	3	3	1		66.7	42.9	16.7	42.8	16.6	14.3
341	188	69	84	106	57.4	55.2	18.7	20.2	23.9	24.6
214	104	53	57	3	62.1	48.6	21.5	24.8	16.4	26.6
192	107	36	49	6	62.0	55.7	18.7	18.8	19.3	25.5
940	207	527	206	88	22.5	22.0	54.1	56.1	23.4	21.9
257	104	89	64	90	41.9	40.5	30.8	34.6	27.3	24.9
78	41	32	5	3	57.6	52.6	27.1	41.0	15.3	6.4
670	136	362	172	61	29.3	20.3	56.4	54.0	23.3	25.7
1,309	611	372	326	415	46.1	46.7	30.4	28.4	23.5	24.9
142	88	22	32	32	55.2	62.0	17.2	15.5	27.6	22.5
1,393	255	761	377	29	18.4	18.3	49.4	54.6	32.2	27.1
1,468	291	811	366	57	21.3	19.8	53.6	55.3	25.1	24.9
7,298	3,041	1,289	2,968	518	42.6	41.7	19.3	17.6	38.1	40.7
913	444	296	188	179	47.7	48.6	31.2	31.3	21.1	20.1
377	206	114	57	14	53.1	54.7	28.2	30.2	18.7	15.1
531	205	80	246	21	38.7	38.6	16.4	15.1	44.9	46.3
642	290	206	146	67	40.4	45.2	30.9	32.1	28.7	22.7
1,489	565	389	535	103	40.2	38.0	25.4	26.1	34.4	35.9
331	156	96	80	79	49.3	46.8	27.9	29.0	22.8	24.2
250	127	72	51	2	53.5	50.8	28.2	28.8	18.3	20.4
35	23	6	6		70.0	65.7	20.0	17.2	10.0	17.1
465	158	128	119		38.8	39.0	33.0	31.6	28.2	29.4
379	191	99	89	58	47.7	50.4	26.3	26.1	26.0	23.5
769	364	182	223	51	49.2	47.3	23.0	23.7	27.8	29.0
633	176	319	138	12	31.5	27.8	45.8	50.4	22.7	21.8
120	67	35	18	24	51.0	55.8	29.6	29.2	19.4	15.0
204	109	77	18	9	48.3	53.4	44.4	37.8	7.3	8.8
27	22		5		86.4	81.5	9.1		4.5	18.5
932	264	511	157	60	27.7	28.3	53.8	54.8	18.5	16.9
75	48	14	13		65.1	64.0	22.1	18.7	12.8	17.3
496	197	188	111	38	31.6	39.7	42.8	37.9	25.6	22.4
235	121	73	41	47	58.7	51.5	26.7	31.1	14.6	17.4
115	75	27	13	24	60.8	65.2	28.4	23.5	10.8	11.3

TABLE 11.—Children Classified by Order of Birth, With Per Cents, for California: 1917 and 1916.

Order of birth	Births		Per cents		Sum of per cents	
	1917	1916	1917	1916	1917	1916
State totals	52,230	50,638	100.0	100.0	100.0	100.0
First born	17,631	17,268	33.8	34.1	33.8	34.1
Second born	13,371	12,801	25.6	25.5	59.4	59.6
Third born	8,134	7,670	15.6	15.1	75.0	74.7
Fourth born	4,794	4,468	9.2	8.8	84.2	83.5
Fifth born	2,886	2,719	5.5	5.4	89.7	88.9
Sixth born	1,977	1,841	3.7	3.6	93.4	92.5
Seventh born	1,160	1,067	2.2	2.2	95.6	94.7
Eighth born	735	715	1.4	1.4	97.0	96.1
Ninth born	491	431	0.9	0.8	97.9	96.9
Tenth and over	753	770	1.4	1.5	99.3	98.4
Unknown	359	788	0.7	1.6		

TABLE 12.—Children Classified by Order of Birth, for Mothers Classified by Race and Nativity, with Per Cents, for California: 1917 and 1916.

Order of birth	Births				Per cents			
	White mothers			Non-Caucasian mothers, mainly Japanese	White mothers			Non-Caucasian mothers, mainly Japanese
	Born in California	Born in other states	Foreign born		Born in California	Born in other states	Foreign born	
1917—State totals...	15,780	18,490	13,443	4,917	100.0	100.0	100.0	100.0
First born	6,381	6,588	3,170	1,492	40.4	36.4	23.6	30.3
Second born	4,219	4,803	2,985	1,364	26.7	26.6	22.2	27.7
Third born	2,192	2,664	2,331	967	13.9	14.7	17.3	19.1
Fourth born	1,156	1,546	1,540	510	7.3	8.8	11.5	10.4
Fifth born	675	809	1,084	238	4.3	5.0	8.1	4.8
Sixth born	422	560	772	153	2.7	3.1	5.7	3.1
Seventh born	277	305	501	87	1.8	1.7	3.7	1.8
Eighth born	142	222	317	54	0.9	1.2	2.4	1.1
Ninth born	110	110	238	31	0.7	0.6	1.8	0.6
Tenth and over...	153	188	383	32	1.0	1.0	2.8	0.7
Unknown	53	165	122	19	0.3	0.9	0.9	0.4
1916—State totals...	15,196	17,765	13,311	4,366	100.0	100.0	100.0	100.0
First born	6,018	6,500	3,221	1,500	39.6	36.6	24.2	34.3
Second born	3,978	4,595	3,132	1,186	26.2	25.9	23.5	27.2
Third born	2,140	2,652	2,181	697	14.1	14.9	16.4	16.0
Fourth born	1,136	1,518	1,455	359	7.5	8.6	10.9	8.2
Fifth born	659	871	968	221	4.3	4.9	7.3	5.1
Sixth born	419	549	751	122	2.8	3.1	5.7	2.8
Seventh born	254	319	449	75	1.7	1.8	3.4	1.7
Eighth born	158	202	323	32	1.0	1.1	2.4	0.7
Ninth born	97	114	203	17	0.6	0.6	1.5	0.4
Tenth and over...	162	100	425	23	1.1	0.9	3.2	0.5
Unknown	175	276	203	134	1.1	1.6	1.5	3.1

III. Infant Mortality.

The infant mortality rate, or proportion of deaths under 1 year per 1,000 live births, was 78 for California in 1917 against 73 in 1916 and 74 in 1915.

Counties with relatively high infant mortality rates in 1917 were as follows: San Bernardino, 142; Sierra, 133, Ventura, 127; Imperial, 122; Merced and Riverside, each, 119; Shasta, 114; Kings, 111; Tulare, 109; and Fresno, 102.

The infant mortality rate per 1,000 births in 1917 was 147 for San Bernardino city, 121 for Fresno city, and 101 for Redlands. On the other hand, the infant mortality rate was only 33 for Pasadena, 41 for Alameda, 45 for Alhambra, 46 for Berkeley, 48 for Napa, 53 for Pomona, and 56 for San Diego.

TABLE 13.—Birth Registration and Infant Mortality Data, for California: 1906 to 1917.

Year	Total live births	Deaths at all ages	Deaths under 1 year	Infant mortality rate per 1,000 births	Ratio of deaths under 1 year per 1,000 deaths at all ages	Relative excess of births over deaths
1917	52,230	42,084	4,081	78	97	24.1
1916	50,638	39,860	3,679	73	92	27.0
1915	48,075	39,026	3,570	74	92	23.2
1914	46,012	37,537	3,964	86	106	22.6
1913	43,852	38,569	4,336	99	112	13.6
1912	39,330	36,709	3,942	100	108	7.1
1911	34,828	34,012	3,528	101	104	2.4
1910	32,138	32,396	3,727	116	115	-----
1909	30,882	30,965	3,480	113	112	-----
1908	28,077	31,287	3,592	128	115	-----
1907	24,674	31,095	3,422	139	110	-----
1906	20,974	29,303	3,347	160	114	-----

TABLE 14.—Infant Mortality Rates, for Counties: 1917.

County	Total live births	Deaths at all ages	Deaths under 1 year	Infant mortality rate per 1,000 births	Distribution of 1,523 lives to be saved in proportion to 1917 birth total
California	52,230	42,064	4,081	78	1,322
Alameda	5,205	3,794	373	72	128
Alpine	2				
Amador	140	141	12	86	5
Butte	494	415	44	89	17
Calaveras	91	100	5	55	3
Colusa	142	120	10	70	5
Contra Costa	897	454	71	79	31
Del Norte	41	28	1	24	1
El Dorado	106	127	5	48	4
Fresno	2,417	1,344	247	102	84
Glenn	168	66	7	42	6
Humboldt	580	392	51	88	20
Imperial	560	380	72	122	21
Inyo	20	54	2	100	1
Kern	968	548	73	76	33
Kings	388	253	43	111	14
Lake	85	61	6	71	3
Lassen	115	68	8	70	4
Los Angeles	12,726	10,566	889	70	444
Madera	226	114	22	97	8
Marin	234	321	19	81	8
Mariposa	32	39	1	31	1
Mendocino	354	325	19	54	12
Merced	361	182	43	119	13
Modoc	104	44	7	67	4
Mono	6	4			
Monterey	461	337	34	74	16
Napa	233	546	12	52	8
Nevada	177	206	9	51	6
Orange	1,061	652	106	100	37
Placer	354	253	20	56	12
Plumas	61	83	10	16	2
Riverside	681	582	81	119	24
Sacramento	1,783	1,417	154	86	62
San Benito	187	104	17	91	7
San Bernardino	1,313	1,274	186	142	46
San Diego	1,558	1,431	82	53	54
San Francisco	7,877	7,156	506	64	275
San Joaquin	1,293	1,378	106	81	45
San Luis Obispo	434	234	26	60	15
San Mateo	514	365	30	53	18
Santa Barbara	727	449	58	80	25
Santa Clara	1,655	1,612	135	82	58
Santa Cruz	415	362	35	84	14
Shasta	245	249	28	114	9
Sierra	30	35	4	133	1
Siskiyou	378	256	35	93	12
Solano	465	375	44	95	16
Sonoma	745	736	52	70	28
Stanislaus	719	429	52	72	25
Sutter	115	96	6	52	4
Tehama	187	165	16	86	7
Trinity	22	31			1
Tulare	1,406	538	110	109	35
Tuolumne	80	121	3	35	3
Ventura	526	345	67	127	18
Yolo	283	199	18	64	10
Yuba	158	157	11	70	6

TABLE 15.—Infant Mortality Rates, for Cities: 1917.

City	Total live births	Deaths at all ages	Deaths under 1 year	Infant mortality rate per 1,000 births
California	52,230	42,064	4,081	78
Cities of 5,000 in 1910.....	30,884	25,370	2,202	71
Northern California—				
Eureka	251	201	17	68
Napa	125	80	6	48
Petaluma	166	146	13	78
Santa Rosa	152	134	12	79
Marysville	98	121	7	71
Central California—				
San Francisco	7,877	7,156	506	64
Alameda	417	291	17	41
Berkeley	747	478	34	46
Oakland	3,512	2,197	250	71
Richmond	311	107	21	68
San Rafael	91	91	7	77
San Luis Obispo.....	162	108	10	62
San Jose	620	434	42	68
Santa Cruz	152	168	13	86
Fresno	887	548	107	121
Bakersfield	496	347	41	83
Sacramento	1,344	1,220	127	94
Stockton	727	901	65	80
Vallejo	247	181	19	77
Southern California—				
Los Angeles	8,264	6,717	591	72
Alhambra	112	64	5	45
Long Beach	525	514	32	61
Pasadena	611	498	20	33
Pomona	246	148	13	53
Santa Monica	180	187	14	78
Santa Ana	269	184	22	82
Riverside	282	289	27	96
Redlands	159	150	16	101
San Bernardino	375	373	55	147
San Diego	1,124	1,048	63	53
Santa Barbara	355	285	31	87
Rest of state.....	21,346	16,714	1,879	88

IV. Deaths.

Diseases of the circulatory system (heart disease, etc.) constitute the principal group of causes of death in California, the per cent of total deaths for this group being 17.8 in 1917 and 20.2 in 1916, against the annual average of 17.0 for 1908 to 1917, and the death rates per 100,000 population being 246.3 and 272.9 as compared with the annual average of 234.1 for the ten-year period just ended.

Tuberculosis, however, is the leading single cause of death in this state, causing about one-seventh of all deaths (13.0 per cent in 1917 and 13.2 per cent in 1916, against the average of 14.2 for 1908 to 1917). The tuberculosis death rate per 100,000 population was 179.6 in 1917 and 178.8 in 1916, against 196.4 for the last ten years.

Next after heart disease, etc., and tuberculosis come diseases of the respiratory system (pneumonia, etc.), diseases of the nervous system

(meningitis, apoplexy, etc.), diseases of the digestive system (diarrhea, etc.), miscellaneous violence (besides suicide), Bright's disease and nephritis, cancer, and also epidemic diseases.

Typhoid fever shows a notable reduction in mortality in the whole twelve years since 1906. The deaths were successively as follows: 657 (1906), 558, 540, 461, 477, 444, 454, 436, 376, 276, 208, and 225 (1917). Similarly, the death rates decreased continuously between 1906 and 1917 thus: 32.3, 26.3, 24.4, 20.0, 19.9, 17.8, 17.6, 16.3, 13.6, 9.7, 7.1, and 7.4.

Analysis of mortality by months shows that the period of high death rates in December to February is followed by steady decreases month after month to the period of minimum mortality in July to October.

Tuberculosis caused 5,457 deaths in 1917 and 5,267 in 1916, the per cents being 13.0 and 13.2, respectively.

Classification of deaths from tuberculosis by length of residence shows that north of Tehachapi many native Californians and old-time residents succumb to this disease. South of Tehachapi, on the other hand, deaths from tuberculosis occur largely among newly arrived consumptives.

Data for 1917 and 1916 on length of residence for all causes of death show that in southern California, where nearly one-sixth (15.5 per cent each year) of all deaths are due to tuberculosis, the proportion for this disease is nearly one-fourth (23.5 and 21.9 per cent, respectively) among all decedents who had lived in the state less than a year and over one-fifth (20.3 and 20.7 per cent, respectively) among those who had been here only one to nine years.

Figures for 1917 and 1916, as for 1911 to 1915, indicate that the months of greatest mortality from tuberculosis for California as a whole are February, March, April and May, while deaths from this disease are relatively least numerous in August, September, October and November.

In short, the death rate of California is evidently swollen considerably by deaths occurring here from disease contracted elsewhere, for where tuberculosis is most prevalent a large proportion of the victims are residents of very short standing. Moreover, infection from these newly arrived consumptives accounts for some of the deaths among native Californians and old-time residents.

Of the 42,084 decedents in 1917, the males were 25,579 and the females 16,505, while among the 39,860 in 1916 the males were 24,202 and the females 15,658. The per cent male was 60.8 in 1917 and 60.7 in 1916 against the average of 62.0 for the preceding ten-year period, 1906 to 1915.

In 1915 the white decedents numbered 39,568; the Japanese, 910; the Chinese, 818; the Negroes, 622; and the Indians, 166. The figures for 1916 were: White, 37,591; Japanese, 739; Chinese, 727; Negro, 624; and Indian, 179. The per cent white was 94.0 in 1917 and 94.3 in 1916, or about the same as the average of 94.6 for the preceding ten-year period. In the last two years the Japanese have finally drawn ahead of the Chinese among California decedents.

Of the white decedents in 1917 and 1916 those born in other states were 15,832 and 14,991, the foreign born were 12,443 and 12,148;

those born in California were 10,249 and 9,469; and the nativity was unknown for 1,044 and 983. The per cent distribution of white decedents in 1917 and 1916, respectively, was: Other states, 40.0 and 39.9; foreign countries, 31.5 and 32.3; California, 25.9 and 25.2; and unknown, 2.6 each year.

The median age of California decedents, half being younger and half older, was 52.0 years in 1917 and 52.5 in 1916 against 51.8 in 1915, 49.6 in 1914, 49.4 in 1913, 49.2 in 1912, and 48.8 in 1911. In general, Californians live longer every year, the median age at death having advanced about three years between 1911 and 1917.

In both 1917 and 1916 the median age was notably low for typhoid fever, 29.4 and 27.3; tuberculosis, 35.9 and 36.3; miscellaneous violence (accidents, etc.), 39.5 and 38.3; suicide, 43.4 and 45.4; as well as digestive ailments, including diarrhea, 36.1 and 37.3.

On the other hand, the median ages both years were relatively high for other causes, as follows: Respiratory system (pneumonia, etc.), 52.4 and 55.3; cancer, 61.2 and 60.6; nervous system (apoplexy, etc.), 62.2 and 60.9; Bright's disease, 63.5 and 63.7; and circulatory system (heart disease, etc.), 68.8 and 68.2.

TABLE 16.—Deaths from Certain Principal Causes, with Proportion per 100,000 Total Deaths and Death Rate per 100,000 Population, for California: 1908 to 1917.

Cause of death	Deaths										Proportion per 1,000 total deaths					
	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	Annual aver- ages 1908 to 1917	1917	1916	1915	1914	1913
All causes	42,084	39,890	39,025	37,537	38,599	38,709	34,012	32,398	30,985	31,287	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	225	206	276	376	438	454	444	477	461	540	11.1	5.3	5.2	7.1	10.0	11.3
Malarial fever	17	54	46	70	77	101	121	113	112	80	2.3	1.1	1.4	1.1	1.9	2.0
Smallpox	13	12	3	1	15	16	9	1	6	9	0.2	0.3	0.3	0.1	0.4	0.4
Measles	188	41	132	153	154	134	84	169	119	101	3.6	4.5	1.0	3.4	4.1	4.0
Scarlet fever	49	34	53	90	85	84	51	69	60	104	1.9	1.2	0.9	1.4	2.4	2.2
Whooping cough	200	197	124	306	128	138	177	307	217	149	5.6	4.8	4.9	3.2	8.2	3.3
Diphtheria and croup	207	290	310	268	186	158	167	218	248	391	6.8	4.9	7.3	7.9	7.1	4.8
Influenza	277	289	181	138	220	146	125	73	82	125	4.4	6.6	7.2	4.6	3.7	5.7
Plague	1	1	1	1	2	1	1	1	1	5	•	•	•	•	•	•
Other epidemic diseases	141	135	116	132	180	196	169	204	108	128	4.2	3.4	3.4	3.0	3.5	4.7
Tuberculosis of lungs	4,758	4,608	4,752	4,629	4,538	4,316	4,353	4,161	4,061	3,945	122.1	113.8	115.6	121.8	120.6	117.5
Tuberculosis of other organs	669	650	799	791	866	812	761	711	612	690	20.3	15.9	16.5	20.5	21.1	23.4
Syphilis and gonorrhea	309	276	251	237	221	207	204	190	154	128	5.9	7.3	6.9	6.4	6.3	5.7
Cancer	3,083	2,879	2,778	2,687	2,565	2,306	2,029	1,984	1,945	1,787	65.7	73.3	72.2	71.1	71.6	66.4
Other general diseases	1,515	1,421	1,394	1,354	1,512	1,414	1,384	1,167	1,023	1,068	36.3	36.0	35.7	35.7	36.1	39.2
Meningitis	282	286	273	331	405	308	381	360	368	571	10.1	6.7	5.9	7.0	8.8	10.5
Other diseases of nervous system	3,413	2,692	3,151	3,239	3,315	2,959	2,796	2,652	2,479	2,422	80.3	81.1	67.5	80.7	86.3	85.9
Diseases of circulatory system	7,488	8,040	7,251	6,397	6,251	6,376	5,516	5,087	4,968	4,540	169.7	177.8	201.7	185.8	170.4	162.7
Pneumonia and broncho-pneumonia	3,799	3,432	3,063	2,677	2,938	2,968	2,672	2,438	2,081	2,421	78.2	90.3	86.1	78.5	71.3	76.1
Other diseases of respiratory system	800	702	728	786	868	872	802	775	842	861	22.5	19.0	17.6	18.7	20.9	22.5
Diarrhea and enteritis, under 2 years	910	792	795	889	1,270	1,056	1,016	1,029	966	922	27.0	21.6	19.9	20.4	23.7	23.9
Diarrhea and enteritis, 2 years and over	384	434	415	352	380	359	307	288	270	248	9.4	9.1	10.9	10.6	9.4	9.6
Other diseases of digestive system	2,948	1,956	1,940	1,992	1,995	1,930	1,796	1,638	1,508	1,448	51.6	53.4	49.1	49.9	51.5	51.7
Bright's disease and nephritis	3,198	2,922	2,684	2,446	2,382	2,135	2,186	2,034	1,885	1,797	64.9	70.8	73.3	68.9	65.2	62.0
Childbirth	836	836	856	844	865	868	866	806	800	839	27.7	27.2	27.7	27.3	27.7	27.7
Diseases of early infancy	1,575	1,505	1,478	1,454	1,444	1,389	1,163	1,129	1,068	1,106	36.3	37.4	37.8	37.9	38.7	37.4
Suicide	988	917	1,085	912	867	808	782	708	702	757	23.0	21.3	23.0	23.0	24.3	21.7
Other violence	3,429	3,277	3,110	3,076	3,153	2,832	2,656	2,466	2,368	2,669	86.7	81.5	82.2	79.5	81.9	81.3
All other causes	1,575	1,566	1,525	1,570	1,774	1,682	1,563	1,516	1,748	1,973	46.8	37.4	37.8	38.1	41.8	46.0

TABLE 16.—Deaths from Certain Principal Causes, with Proportion per 100,000 Total Deaths and Death Rate per 100,000 Population for California: 1908 to 1917—Concluded.

Cause of death	Proportion per 1,000 total deaths					Death rate per 100,000 population									
	1912	1911	1910	1909	1908	Annual average 1908 to 1917	1917	1916	1915	1914	1913	1911	1910	1909	1908
	1912	1911	1910	1909	1908	Annual average 1908 to 1917	1917	1916	1915	1914	1913	1911	1910	1909	1908
All causes	1,000	1,000	1,000	1,000	1,000	1,380.6	1,885.3	1,382.9	1,367.1	1,368.5	1,444.8	1,422.9	1,366.9	1,343.7	1,413.1
Typhoid fever	12.4	13.0	14.7	14.9	17.3	15.4	7.4	7.1	9.7	13.6	16.3	17.6	17.8	20.0	24.4
Malarial fever	2.7	3.5	3.5	3.6	2.6	3.2	1.5	1.8	1.6	2.5	2.9	3.9	4.9	4.7	3.6
Smallpox	0.4	0.3	*	0.3	0.3	0.4	0.4	0.4	0.1	†	0.6	0.6	0.4	0.1	0.3
Measles	3.6	2.5	6.2	3.8	3.2	5.0	6.2	1.4	4.6	5.5	5.8	5.2	3.4	8.3	4.6
Scarlet fever	0.9	2.4	2.1	2.2	3.3	2.6	1.6	1.2	1.9	3.3	3.2	1.3	2.9	3.0	4.7
Whooping cough	5.3	5.2	9.5	7.0	4.8	7.7	6.6	6.7	4.3	11.1	4.8	7.5	7.1	12.8	9.4
Diphtheria and croup	4.3	4.9	6.7	8.0	12.5	9.5	9.8	9.8	10.9	9.7	7.0	6.1	6.7	9.1	10.8
Influenza	4.0	3.7	2.3	2.6	4.0	6.1	9.1	9.8	6.3	5.0	8.2	5.6	5.0	3.1	5.6
Plague	5.1	5.0	6.3	3.5	4.0	5.8	4.6	4.6	4.1	4.8	0.1	7.2	6.8	0.1	0.2
Other epidemic diseases	117.6	128.0	128.4	131.0	126.1	168.4	177.8	156.4	104.5	163.9	167.8	167.3	174.9	176.1	173.1
Tuberculosis of lungs	22.1	22.4	21.9	19.8	19.8	23.0	22.0	22.4	28.0	28.6	32.4	31.5	30.6	29.7	28.0
Tuberculosis of other organs	5.7	6.0	5.9	5.0	4.1	8.2	10.2	9.4	8.8	8.6	8.3	8.0	8.2	7.9	5.8
Syphilis and gonorrhea	62.8	56.6	61.2	62.8	55.5	90.6	101.8	97.7	97.2	97.3	96.0	89.4	81.5	82.8	75.4
Cancer	33.5	39.2	38.0	33.0	33.8	50.2	49.9	46.2	48.8	49.0	56.6	54.8	53.6	44.3	47.7
Other general diseases	8.4	11.2	11.4	12.8	13.2	14.0	9.3	8.0	9.6	12.0	15.1	11.9	13.3	17.3	25.8
Meningitis	8.4	11.2	11.4	12.8	13.2	14.0	9.3	8.0	9.6	12.0	15.1	11.9	13.3	17.3	25.8
Other diseases of nervous system	80.6	82.2	81.2	80.0	77.4	110.9	112.3	91.4	110.4	117.2	124.1	114.7	112.4	109.8	100.3
Diseases of circulatory system	173.7	165.2	157.0	160.3	145.1	234.1	246.3	272.9	254.0	231.5	235.1	247.2	221.7	215.3	204.9
Pneumonia and broncho-pneumonia	80.9	75.6	75.3	67.2	77.4	107.9	125.1	116.5	107.3	96.9	110.0	115.1	107.4	90.2	106.3
Other diseases of respiratory system	23.7	25.6	23.9	27.2	27.5	31.0	29.3	23.8	25.5	23.5	32.5	33.8	32.2	32.5	38.9
Diarrhea and enteritis, under 2 years	28.8	29.9	31.8	31.2	29.5	37.2	30.0	26.9	27.8	32.2	47.5	40.9	40.8	41.9	41.6
Diarrhea and enteritis, 2 years and over	9.8	9.0	8.7	8.7	7.8	12.9	12.6	14.7	14.5	12.7	13.8	13.9	12.3	11.7	11.0
Other diseases of digestive system	53.9	51.9	50.4	51.5	52.6	71.3	73.9	66.4	68.3	69.9	74.7	70.8	71.0	60.2	74.3
Bright's diseases and nephritis	50.3	64.2	62.8	60.0	57.4	89.5	104.9	99.2	94.0	88.5	89.5	84.7	87.8	84.9	81.1
Childbirth	6.9	10.4	9.5	9.7	10.8	13.4	12.8	11.7	12.5	12.5	14.8	14.1	14.3	13.0	15.3
Diseases of early infancy	37.3	34.3	34.9	32.2	35.4	50.2	51.9	51.1	51.8	52.6	54.0	53.1	46.9	47.1	50.0
Suicide	21.9	22.1	21.8	22.7	24.2	31.7	29.6	31.1	36.3	33.0	31.3	31.1	28.5	30.4	34.2
Other violence	60.4	79.0	76.7	68.7	82.1	111.5	112.9	111.2	111.3	111.3	117.3	114.4	107.9	111.1	103.7
All other causes	45.8	47.7	49.9	56.4	63.1	63.9	51.9	51.1	53.4	56.3	66.4	65.2	62.4	75.3	85.9

*Less than one-tenth of 1 per thousand. †Less than one-tenth of 1 per 100,000.

TABLE 17.—Births and Deaths Classified by Month of Occurrence, with Annual Rates, for California, 1917.

Month of occurrence	Births		Deaths		Rate per 1,000 population			
	1917	1916	1917	1916	Births		Deaths	
					1917	1916	1917	1916
State total.....	52,230	50,638	42,084	39,860	17.2	17.2	13.9	13.5
January	4,328	4,268	4,361	4,171	16.8	17.0	16.9	16.7
February	3,995	3,995	3,669	3,176	17.1	17.6	15.7	14.0
March	4,504	4,174	3,754	3,343	17.5	16.7	14.5	13.4
April	4,344	4,068	3,530	3,167	17.4	16.8	14.1	13.1
May	4,295	4,081	3,347	3,299	16.6	16.3	13.0	13.2
June	4,249	4,092	3,517	3,076	17.0	16.9	14.1	12.7
July	4,560	4,411	3,301	3,134	17.7	17.6	12.8	12.5
August	4,408	4,334	2,975	2,948	17.1	17.3	11.5	11.8
September	4,338	4,140	3,081	2,864	17.4	17.1	12.3	11.8
October	4,466	4,187	3,227	3,014	17.3	16.7	12.5	12.0
November	4,214	4,243	3,413	3,476	16.9	17.5	13.7	14.4
December	4,534	4,645	3,909	4,192	17.6	18.6	15.1	16.7

TABLE 18.—Number and Per Cent of Deaths from Tuberculosis, for Geographic Divisions: 1917 and 1916.*

Geographic division	Deaths		Tuberculosis				Annual average per cent 1906 to 1913
			Number		Per cent		
	1917	1916	1917	1916	1917	1916	
The state	42,084	39,860	5,457	5,267	13.0	13.2	14.6
Northern California.....	4,333	4,150	467	460	10.8	11.1	11.1
Coast counties	2,119	2,145	235	237	11.1	11.0	11.6
Interior counties	2,214	2,005	232	223	10.5	11.1	10.9
Central California	22,083	20,004	2,500	2,513	11.6	12.0	13.0
San Francisco	7,156	7,163	851	903	11.9	12.6	12.9
Alameda County	3,794	3,570	414	416	10.9	11.7	12.3
Other bay counties.....	1,140	1,057	148	114	13.0	10.8	12.3
Coast counties	2,630	2,618	238	272	9.0	10.4	13.3
Interior counties	7,354	6,506	909	808	12.4	12.4	13.5
Southern California	15,068	14,806	2,430	2,294	15.5	15.5	18.8
Los Angeles (city).....	6,717	6,224	1,000	909	15.8	15.6	18.6
Rest of county.....	3,838	3,814	602	595	15.7	15.6	18.6
Other counties	5,113	4,768	708	730	15.0	15.3	18.8

*For list of counties included in geographic divisions, see Table 1.

TABLE 19.—Deaths from Tuberculosis Classified by Length of Residence in California, with Per Cents, for Geographic Divisions: 1917 and 1916.

Geographic division	Total	Length of residence					Per cent				
		Under 1 year	1 to 9 years	10 years and over	Life	Unknown	Under 1 year	1 to 9 years	10 years and over	Life	Unknown
1917—The state	5,457	385	1,430	1,819	1,532	281	7.2	26.2	33.3	28.1	5.2
Northern California	467	6	62	166	196	37	1.3	13.3	35.5	42.0	7.9
Coast counties	235	1	20	86	109	19	0.4	8.5	36.6	46.4	8.1
Interior counties	232	5	42	80	87	18	2.1	18.1	34.5	37.5	7.8
Central California	2,560	94	486	926	930	124	3.7	19.0	36.2	36.3	4.8
San Francisco	851	26	158	309	320	38	3.0	18.6	36.3	37.6	4.5
Alameda County	414	15	72	152	168	7	3.6	17.4	36.7	40.6	1.7
Other bay counties	148	4	25	47	62	10	2.7	16.9	31.7	41.9	6.8
Coast counties	238	4	33	88	107	6	1.7	13.9	37.0	44.9	2.5
Interior Counties	909	45	198	330	273	63	5.0	21.8	36.3	30.0	6.9
Southern California	2,430	295	882	727	406	120	12.2	36.3	29.9	16.7	4.9
Los Angeles (city)	1,060	109	389	362	171	29	10.3	36.7	34.2	16.1	2.7
Rest of county	602	96	228	163	74	41	15.9	37.9	27.1	12.3	6.8
Other counties	768	90	265	202	161	50	11.7	34.5	26.3	21.0	6.5
1916—The state	5,267	280	1,416	1,665	1,509	367	5.3	26.9	32.2	28.6	7.0
Northern California	460	12	54	159	189	46	2.6	11.7	34.6	41.1	10.0
Coast counties	237	2	24	77	113	21	0.8	10.1	32.5	47.7	8.9
Interior counties	223	10	30	82	76	25	4.5	13.4	36.8	34.1	11.2
Central California	2,513	61	465	865	958	164	2.5	18.5	34.4	38.1	6.5
San Francisco	903	24	177	307	347	48	2.7	19.6	34.0	38.4	5.3
Alameda County	416	12	66	157	173	8	2.9	15.9	37.7	41.6	1.9
Other bay counties	114	2	19	28	52	13	1.7	16.7	24.6	45.6	11.4
Coast counties	272	8	43	88	121	12	2.9	15.8	32.4	44.5	4.4
Interior counties	806	15	160	285	265	83	1.8	19.8	35.3	32.8	10.3
Southern California	2,294	207	897	671	362	157	9.0	39.1	29.3	15.8	6.8
Los Angeles (city)	969	86	407	314	127	35	8.9	42.0	32.4	13.1	3.6
Rest of county	595	60	223	163	92	57	10.1	37.5	27.4	15.4	9.6
Other counties	730	61	267	194	143	65	8.3	36.6	26.6	19.6	8.0

TABLE 20.—Deaths from Tuberculosis Classified by Length of Residence (in Months), with Per Cents, for Southern California: 1917 and 1916.

Geographic division	Length of residence									
	Total under 1 year		Under 1 month		1 to 2 months		3 to 5 months		6 to 11 months	
	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916
Numbers—										
Southern California	295	207	45	20	76	43	77	63	97	72
Los Angeles (city)	109	86	26	16	23	19	29	22	31	29
Rest of county	96	60	7	7	28	10	24	23	37	20
Other counties	90	61	12	6	25	14	24	18	29	23
Per cents—										
Southern California	12.2	9.0	1.9	1.3	3.1	1.9	3.2	2.7	4.0	3.1
Los Angeles (city)	10.3	8.9	2.5	1.6	2.2	2.0	2.7	2.3	2.9	3.0
Rest of county	15.9	10.1	1.2	1.2	4.6	1.7	4.0	3.9	6.1	3.3
Other counties	11.7	8.3	1.6	0.8	3.2	1.9	3.1	2.5	3.8	3.1

TABLE 21.—Number and Per Cent of Deaths from Tuberculosis Among Decedents Classified by Length of Residence in California, for Territory North and South of Tehachapi: 1917 and 1916.

Length of residence	Deaths		Tuberculosis			
			Number		Per cent	
	1917	1916	1917	1916	1917	1916
California	42,084	39,800	5,457	5,267	13.0	13.2
Under 1 year.....	1,898	1,483	395	280	20.8	18.9
1 to 9 years.....	7,820	7,172	1,430	1,416	19.5	19.7
10 years and over.....	18,983	17,783	1,819	1,666	9.6	9.5
Life	11,210	10,301	1,532	1,509	13.7	14.3
Unknown	2,723	3,221	281	367	10.3	11.4
North of Tehachapi.....	26,416	25,064	3,027	2,973	11.5	11.9
Under 1 year.....	644	538	100	73	15.5	13.6
1 to 9 years.....	2,971	2,830	548	519	18.4	18.3
10 years and over.....	13,011	12,274	1,092	1,024	8.4	8.3
Life	8,044	7,393	1,126	1,147	14.0	15.5
Unknown	1,746	2,019	161	210	9.2	10.4
South of Tehachapi.....	15,668	14,806	2,430	2,294	15.5	15.5
Under 1 year.....	1,254	945	295	207	23.5	21.9
1 to 9 years.....	4,349	4,342	882	897	20.3	20.7
10 years and over.....	5,922	5,509	727	671	12.3	12.2
Life	3,166	2,808	406	392	12.8	12.9
Unknown	977	1,202	120	157	12.3	13.1

TABLE 22.—Number and Per Cent of Deaths Occurring Each Month from Tuberculosis, for California: 1917 and 1916.

Month	Deaths		Tuberculosis				Annual average Per cent: 1911 to 1915
			Number		Per cent		
	1917	1916	1917	1916	1917	1916	
State totals -----	42,084	39,800	5,457	5,267	13.0	13.2	14.3
January -----	4,361	4,171	554	566	12.7	13.6	14.0
February -----	3,669	3,176	498	492	13.6	15.5	15.4
March -----	3,754	3,343	558	492	14.9	14.7	16.1
April -----	3,530	3,167	520	455	14.7	14.4	15.8
May -----	3,347	3,299	455	453	13.6	13.7	15.8
June -----	3,517	3,076	440	405	12.5	13.2	14.6
July -----	3,301	3,134	433	396	13.1	12.6	14.0
August -----	2,975	2,948	395	369	13.3	12.5	13.2
September -----	3,061	2,864	338	346	11.0	12.1	13.6
October -----	3,227	3,014	381	375	11.8	12.4	12.9
November -----	3,413	3,476	395	405	11.6	11.7	12.9
December -----	3,909	4,192	488	513	12.5	12.2	13.3

TABLE 23.—Deaths from Certain Principal Causes Classified by Sex, with Per Cents, For California: 1917 and 1916.

Cause of death	Deaths						Per cent male		Per cent female	
	Total		Male		Female					
	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916
All causes	42,084	39,860	25,579	24,302	16,505	15,658	60.8	60.7	39.2	39.3
Typhoid fever	225	208	158	137	67	71	70.2	65.9	29.8	34.1
Malarial fever	47	54	32	38	15	16	68.1	70.4	31.9	29.6
Smallpox	13	12	8	8	5	4	61.5	66.7	38.5	33.3
Measles	188	41	98	25	90	16	52.1	61.0	47.9	39.0
Scarlet fever	49	34	28	21	21	13	57.1	61.8	42.9	38.2
Whooping-cough	200	197	88	82	112	115	44.0	41.6	56.0	58.4
Diphtheria and croup	207	290	121	156	86	134	58.5	53.8	41.5	46.2
Influenza	277	289	140	139	137	150	50.5	48.1	49.5	51.9
Other epidemic diseases	141	135	76	74	65	61	53.9	54.8	46.1	45.2
Tuberculosis of lungs	4,788	4,638	3,221	3,074	1,567	1,534	67.3	66.7	32.7	33.3
Tuberculosis of other organs	669	659	374	379	295	280	55.9	57.5	44.1	42.5
Syphilis and gonorrhea	309	276	216	190	98	86	69.9	68.8	30.1	31.2
Cancer	3,085	2,879	1,459	1,335	1,626	1,544	47.3	46.4	52.7	53.6
Other general diseases	1,515	1,421	879	835	636	586	58.0	58.8	42.0	41.2
Meningitis	282	236	176	136	106	100	62.4	57.6	37.6	42.4
Other diseases of nervous system	3,413	2,692	1,918	1,544	1,495	1,148	56.2	57.4	43.8	42.6
Diseases of circulatory system	7,483	8,040	4,535	4,818	2,948	3,222	60.6	59.9	39.4	40.1
Pneumonia and broncho-pneumonia	3,799	3,432	2,319	2,087	1,480	1,345	61.0	60.8	39.0	39.2
Other diseases of respiratory system	800	702	499	392	301	310	62.4	55.8	37.6	44.2
Diarrhea and enteritis, under two years	910	792	500	427	401	365	55.9	53.9	44.1	46.1
Diarrhea and enteritis, two years and over	384	434	231	251	153	183	60.2	57.8	39.8	42.2
Other diseases of digestive system	2,246	1,956	1,355	1,191	891	765	60.3	60.9	39.7	39.1
Bright's disease and nephritis	3,188	2,922	1,933	1,795	1,255	1,127	60.6	61.4	39.4	38.6
Childbirth	390	346			390	346			100.0	100.0
Diseases of early infancy	1,575	1,505	878	863	697	642	55.7	57.3	44.3	42.7
Suicide	898	917	710	740	188	177	79.1	80.7	20.9	19.3
Other violence	3,429	3,277	2,712	2,645	717	632	79.1	80.7	20.9	19.3
All other causes	1,575	1,506	906	820	669	686	57.5	54.4	42.5	45.6

TABLE 24.—Deaths from Certain Principal Causes Classified by Race, with Per Cent White, for California: 1917 and 1916.

Cause of death	Deaths						Per cent white
	Total	White	Negro	Indian	Chinese	Japanese	
1917 All causes	42,064	30,508	622	166	818	910	94.0
Typhoid fever	225	188	5	3	4	25	83.6
Malarial fever	47	43	1	1	1	1	91.5
Smallpox	13	13					100.0
Measles	188	179	2	2	2	3	95.2
Scarlet fever	49	46	1			2	93.9
Whooping-cough	240	188	1	2	2	12	91.5
Diphtheria and croup	267	252			2	3	97.6
Influenza	277	270	1		2	4	97.5
Other epidemic diseases	141	126	2		4	9	89.4
Tuberculosis of lungs	4,748	4,352	128	42	172	94	90.9
Tuberculosis of other organs	669	506	18	12	10	63	84.6
Syphilis and gonorrhea	399	273	11	3	17	6	88.0
Cancer	3,065	2,986	27	4	46	23	96.8
Other general diseases	1,515	1,461	21	2	16	15	96.4
Meningitis	282	260	2		5	15	92.2
Other diseases of nervous system	3,413	3,316	44	5	35	13	97.2
Diseases of circulatory system	7,483	7,221	96	12	126	28	96.5
Pneumonia and broncho-pneumonia	3,790	3,537	63	21	78	100	93.1
Other diseases of respiratory system	840	750	14	1	20	15	93.8
Diarrhea and enteritis, under two years	910	819	7	9	9	66	91.0
Diarrhea and enteritis, two years and over	384	349	6	2	5	22	90.9
Other diseases of digestive system	2,246	2,110	27	2	49	58	93.9
Bright's disease and nephritis	3,188	3,055	39	5	68	21	96.6
Childbirth	369	347	12	1	2	27	89.2
Diseases of early infancy	1,575	1,428	30	4	12	101	90.7
Suicide	806	845	3	3	12	35	94.1
Other violence	3,429	3,168	33	19	99	110	92.4
All other causes	1,575	1,476	28	11	21	39	93.7
1916 All causes	38,869	37,591	624	179	727	739	94.3
Typhoid fever	268	191	2	1	1	13	91.8
Malarial fever	54	45		1	4	4	83.3
Smallpox	12	12					100.0
Measles	41	37	1	2		1	91.2
Scarlet fever	34	33			1		97.1
Whooping-cough	197	186	5			6	94.4
Diphtheria and croup	291	277		1	5	7	95.5
Influenza	280	279	3	1		6	96.5
Other epidemic diseases	135	126	1	3	1	4	93.3
Tuberculosis of lungs	4,008	4,173	150	44	160	81	90.6
Tuberculosis of other organs	659	579	18	9	11	42	87.9
Syphilis and gonorrhea	276	241	13		11	11	87.3
Cancer	2,879	2,786	30	6	44	13	96.8
Other general diseases	1,421	1,379	15	3	14	10	96.5
Meningitis	236	212	3		2	19	89.8
Other diseases of nervous system	2,692	2,597	40	8	29	18	96.5
Diseases of circulatory system	8,010	7,752	106	9	143	30	96.4
Pneumonia and broncho-pneumonia	3,432	3,203	56	25	68	80	93.1
Other diseases of respiratory system	702	661	11	6	14	11	94.0
Diarrhea and enteritis, under two years	792	717	1	3	5	66	90.5
Diarrhea and enteritis, two years and over	434	393	11	2	11	17	90.6
Other diseases of digestive system	1,956	1,851	22	6	38	39	94.6
Bright's disease and nephritis	2,922	2,785	52	7	57	21	95.3
Childbirth	346	324	4	3	1	14	93.6
Diseases of early infancy	1,505	1,385	19	6	10	85	92.0
Suicide	917	868	8	2	15	24	94.7
Other violence	3,277	3,075	37	19	63	83	93.8
All other causes	1,506	1,425	16	12	19	34	94.6

TABLE 25.—White Decedents Dying from Certain Principal Causes, with Per Cents, for California: 1917 and 1916.

Cause of death	White decedents					Per cent			
	Total	Born in California	Born in other states	Foreign born	Unknown	Born in California	Born in other states	Foreign born	Unknown
1917—All causes	39,568	10,249	15,332	12,443	1,044	25.9	40.0	31.5	2.6
Typhoid fever	188	74	56	56	2	39.3	29.8	29.8	1.1
Malarial fever	43	19	18	4	2	44.2	41.9	9.3	4.6
Smallpox	13	5	3	4	1	38.4	23.1	30.8	7.7
Measles	179	143	27	7	2	79.9	15.1	3.9	1.1
Scarlet fever	46	38	6	2		82.6	13.0	4.4	—
Whooping-cough	183	169	10	4		92.3	5.5	2.2	—
Diphtheria and croup	202	163	30	8	1	80.7	14.8	4.0	0.5
Influenza	270	51	134	81	4	18.9	49.6	30.0	1.5
Other epidemic diseases	126	51	45	27	3	40.5	35.7	21.4	2.4
Tuberculosis of lungs	4,352	1,064	1,720	1,501	77	24.2	39.5	34.5	1.8
Tuberculosis of other organs	566	322	149	92	3	56.9	26.3	16.3	0.5
Syphilis and gonorrhea	272	102	89	72	9	37.5	32.7	26.5	3.3
Cancer	2,988	338	1,458	1,164	26	11.3	48.8	39.0	0.9
Other general diseases	1,461	323	616	474	48	22.1	42.2	32.4	3.3
Meningitis	260	157	65	37	1	60.4	25.0	14.2	0.4
Other diseases of nervous system	3,316	436	1,704	1,103	73	13.1	51.4	33.3	2.2
Diseases of circulatory system	7,221	639	3,635	2,771	176	8.9	50.3	38.4	2.4
Pneumonia and broncho-pneumonia	3,537	1,215*	1,163	1,076	83	34.4	32.9	30.4	2.3
Other diseases of respiratory system	750	155	313	277	5	20.7	41.7	36.9	0.7
Diarrhea and enteritis, under two years	819	772	33	12	2	94.3	4.0	1.5	0.2
Diarrhea and enteritis, two years and over	349	149	105	91	4	42.7	30.1	26.1	1.1
Other diseases of digestive system	2,110	545	853	682	30	25.9	40.4	32.3	1.4
Bright's disease and nephritis	3,056	422	1,548	1,038	47	13.8	50.7	34.0	1.5
Childbirth	847	104	130	111	2	30.0	37.4	32.0	0.6
Diseases of early infancy	1,428	1,428				100.0			
Suicide	845	145	302	298	105	17.2	35.7	34.7	12.4
Other violence	3,198	790	1,024	1,038	316	24.9	32.3	32.8	10.0
All other causes	1,476	440	596	418	22	29.8	40.4	28.3	1.5
1916—All causes	37,591	9,469	14,991	12,148	983	25.2	39.9	32.3	2.6
Typhoid fever	191	71	66	47	7	37.2	34.5	24.6	3.7
Malarial fever	45	18	18	9		40.0	40.0	20.0	—
Smallpox	12	3	2	6	1	25.0	16.7	50.0	8.3
Measles	37	34	2	1		91.9	5.4	2.7	—
Scarlet fever	33	27	4	2		81.8	12.1	6.1	—
Whooping-cough	186	17.5	8	3		94.1	4.3	1.6	—
Diphtheria and croup	277	224	37	15	1	80.9	13.3	5.4	0.4
Influenza	279	36	155	82	6	12.9	55.6	29.4	2.1
Other epidemic diseases	126	48	43	32	3	38.1	34.1	25.4	2.4
Tuberculosis of lungs	4,173	1,058	1,651	1,385	79	25.3	39.6	33.2	1.9
Tuberculosis of other organs	579	328	132	109	10	56.7	22.8	18.8	1.7
Syphilis and gonorrhea	241	90	63	77	11	37.3	26.1	32.1	4.6
Cancer	2,786	318	1,385	1,051	32	11.4	49.7	37.7	1.2
Other general diseases	1,379	282	606	448	44	20.4	43.9	32.5	3.2
Meningitis	212	147	43	20	2	69.3	20.3	9.4	1.0
Other diseases of nervous system	2,567	340	1,333	879	45	13.1	51.3	33.9	1.7
Diseases of circulatory system	7,752	687	3,834	3,067	104	8.9	49.4	39.6	2.1
Pneumonia and broncho-pneumonia	3,203	1,048	1,044	1,034	77	32.7	32.6	32.3	2.4
Other diseases of respiratory system	600	132	254	267	7	20.0	38.5	40.4	1.1
Diarrhea and enteritis, under two years	717	679	21	15	2	94.7	2.9	2.1	0.3
Diarrhea and enteritis, two years and over	393	121	135	131	6	30.8	34.4	33.3	1.5
Other diseases of digestive system	1,851	473	748	608	22	25.6	40.4	32.8	1.2
Bright's disease and nephritis	2,785	344	1,438	971	32	12.4	51.6	34.9	1.1
Childbirth	324	100	142	82		30.9	43.8	25.3	—
Diseases of early infancy	1,385	1,378	5	2		99.5	0.4	0.1	—
Suicide	898	124	313	314	117	14.3	36.0	36.2	13.5
Other violence	3,075	741	943	1,008	295	24.1	30.7	35.6	9.6
All other causes	1,425	443	567	395	20	31.1	39.8	27.7	1.4

TABLE 26.—Deaths from Certain Principal Causes, Classified by Age Periods, for California: 1917 and 1916.

Cause of death	Deaths											5 years and over
	All ages	Under 1 year	1 to 4 years	5 to 14 years	15 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over	
1917—All causes	42,084	4,061	1,701	1,220	2,172	3,734	4,544	5,232	5,062			18,438
Typhoid fever	225	2	8	32	48	50	35	30	12			8
Malarial fever	47	5	3	5	1	7	5	6	3			12
Smallpox	13		2	2	1	1	1	2	3			1
Measles	188	35	90	26	13	14	5	2	2			1
Scarlet fever	49		20	11	15	2		1				
Whooping-cough	200	114	81	5								
Diphtheria and croup	207	11	100	82	5	3	5					1
Influenza	277	17	13	4	3	8	12	13	23			179
Other epidemic diseases	141	36	20	3	4	8	12	14	17			97
Tuberculosis of lungs	4,788	22	45	120	27	1,197	1,125	712	490			350
Tuberculosis of other organs	669	61	164	92	94	85	69	51	33			290
Syphilis and gonorrhea	309	68	8	3	11	36	62	58	36			27
Cancer	3,085	1	4	9	19	99	301	563	854			1,205
Other general diseases	1,515	42	27	92	81	134	185	245	299			416
Meningitis	282	51	73	42	34	26	27	12	10			7
Other diseases of nervous system	3,413	32	44	44	65	152	282	486	674			1,632
Diseases of circulatory system	7,483	7	15	88	99	240	471	814	1,346			4,403
Pneumonia and broncho-pneumonia	3,799	589	324	106	154	212	319	421	453			1,221
Other diseases of respiratory system	800	74	42	18	22	43	40	69	98			394
Diarrhea and enteritis, under two years	910	742	168									
Diarrhea and enteritis, two years and over	384		132	25	7	16	33	33	33			105
Other diseases of digestive system	2,246	142	72	105	126	201	239	381	343			587
Bright's disease and nephritis	3,188	18	21	51	67	130	277	479	657			1,488
Childbirth	389				91	186	109	3				
Diseases of early infancy	1,575	1,575										
Suicide	898				85	192	203	194	106			118
Other violence	3,429	78	198	230	368	623	591	510	364			467
All other causes	1,575	359	27	25	32	69	86	101	101			775
1916—All causes	39,800	3,679	1,507	1,026	2,016	3,551	4,367	5,089	5,718			12,907
Typhoid fever	268	2	12	24	55	41	34	24	11			5
Malarial fever	54	6	10	1	3	4	8	5	5			12
Smallpox	12	1	5			1	2	2				1
Measles	41	6	27	5	1	1	1					
Scarlet fever	34	4	14	11	3	2						
Whooping-cough	197	126	66	2		1	1		1			
Diphtheria and croup	200	15	133	120	4	5	7	4	2			
Influenza	289	18	9	5	4	3	10	14	25			201
Other epidemic diseases	135	21	16	6	4	12	9	14	16			87
Tuberculosis of lungs	4,608	18	49	113	639	1,181	1,061	714	491			352
Tuberculosis of other organs	659	64	161	89	83	80	68	50	32			32
Syphilis and gonorrhea	276	65	13	1	22	43	46	43	29			14
Cancer	2,879	2	12	5	17	96	302	595	734			1,116
Other general diseases	1,421	19	24	64	50	109	200	276	287			392
Meningitis	236	63	51	43	22	16	17	11	10			3
Other diseases of nervous system	2,692	24	46	23	55	117	270	416	500			1,241
Diseases of circulatory system	8,040	10	24	81	133	247	490	901	1,493			4,661
Pneumonia and broncho-pneumonia	3,432	531	269	85	102	182	209	360	425			1,209
Other diseases of respiratory system	702	56	33	5	20	25	36	79	90			358
Diarrhea and enteritis, under two years	792	649	143									
Diarrhea and enteritis, two years and over	434		102	19	11	24	37	49	54			138
Other diseases of digestive system	1,956	81	66	86	129	214	281	280	317			483
Bright's disease and nephritis	2,922	9	11	28	63	119	254	435	624			1,379
Childbirth	346				100	155	91					
Diseases of early infancy	1,505	1,505										
Suicide	917				77	175	199	221	151			94
Other violence	3,277	46	184	187	377	627	591	489	329			447
All other causes	1,506	338	27	23	42	71	93	96	92			722

TABLE 27.—Per Cent Distribution, by Age Periods, of Deaths from Certain Principal Causes, for California: 1917 and 1916.

Cause of death	Per cent of deaths									
	Under 1 year		1 to 4 years		5 to 14 years		15 to 34 years		35 to 34 years	
	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916
All causes	9.7	9.2	4.0	3.8	2.9	2.6	5.2	5.1	8.9	8.9
Typhoid fever	0.9	1.0	3.6	5.8	14.2	11.5	21.3	26.4	22.2	19.7
Malarial fever	10.7	11.1	6.4	18.5	10.6	1.8	2.1	5.6	14.9	7.4
Smallpox	8.3	8.3	15.4	41.7	15.4	7.7	7.7	7.7	7.7	8.3
Measles	18.6	14.6	47.9	65.9	13.8	12.2	6.9	2.5	7.4	2.4
Scarlet fever	11.8	11.8	40.8	41.2	23.5	32.3	30.6	8.8	4.1	5.9
Whooping-cough	57.0	64.0	40.5	33.5	2.5	1.0	2.4	1.4	1.5	1.7
Diphtheria and croup	5.3	5.2	48.2	45.8	39.6	41.4	2.4	1.4	1.5	1.7
Influenza	6.1	6.2	4.7	3.1	1.5	1.7	1.1	1.4	2.9	1.0
Other epidemic diseases	25.5	15.6	14.2	11.8	2.1	4.4	2.8	3.0	5.7	8.9
Tuberculosis of lungs	0.5	0.4	0.9	1.1	2.5	2.4	15.2	13.9	25.0	25.6
Tuberculosis of other organs	9.1	9.7	24.5	24.4	13.8	13.5	14.1	12.6	12.7	12.1
Syphilis and gonorrhea	22.0	23.5	2.6	4.7	1.0	0.3	3.6	8.0	11.6	15.6
Cancer	0.1	0.1	0.1	0.4	0.3	0.2	0.6	0.6	3.2	3.3
Other general diseases	2.8	1.3	1.8	1.7	6.1	4.5	5.3	3.5	8.8	7.7
Meningitis	18.1	26.7	25.9	21.6	14.9	18.2	12.1	9.3	9.2	6.8
Other diseases of nervous system	0.9	0.9	1.3	1.7	1.3	0.9	1.9	2.0	4.5	4.3
Diseases of circulatory system	0.1	0.1	0.2	0.3	1.2	1.0	1.3	1.6	3.2	3.1
Pneumonia and broncho-pneumonia	15.5	15.5	8.5	7.8	2.8	2.5	4.1	3.0	5.6	5.3
Other diseases of respiratory system	9.3	8.0	5.3	4.7	2.3	0.7	2.7	2.8	5.4	3.6
Diarrhea and enteritis, under two years	81.5	81.9	18.5	18.1						
Diarrhea and enteritis, two years and over			34.4	23.5	6.5	4.4	1.8	2.5	4.2	5.5
Other diseases of digestive system	6.3	4.1	3.2	3.4	4.7	4.4	5.6	6.6	8.9	10.9
Bright's disease and nephritis	0.6	0.3	0.6	0.4	1.6	1.0	2.1	2.1	4.1	4.1
Childbirth							23.4	28.9	47.8	44.8
Diseases of early infancy	100.0	100.0								
Suicide							9.5	8.4	21.4	19.1
Other violence	2.3	1.4	5.8	5.6	6.7	5.7	10.7	11.5	18.2	19.1
All other causes	22.8	22.5	1.7	1.8	1.6	1.5	2.0	2.8	4.4	4.7

Cause of death	Per cent of deaths							
	35 to 44 years		45 to 54 years		55 to 64 years		65 years and over	
	1917	1916	1917	1916	1917	1916	1917	1916
All causes	10.8	10.9	12.4	12.8	14.2	14.3	31.9	32.4
Typhoid fever	15.6	16.4	13.3	11.5	5.3	5.3	3.6	2.4
Malarial fever	10.6	14.8	12.8	9.3	6.4	9.3	25.5	22.2
Smallpox	7.7	16.7	15.4	16.7	23.1		7.6	8.3
Measles	2.7	2.4	1.1		1.1		0.5	
Scarlet fever			2.0					
Whooping-cough		0.5				0.5		
Diphtheria and croup	2.4	2.4		1.4		0.7	0.5	
Influenza	4.3	3.5	4.7	4.8	10.1	8.7	64.6	69.6
Other epidemic diseases	8.5	6.7	9.9	10.4	12.1	11.8	19.2	27.4
Tuberculosis of lungs	23.5	22.8	14.9	15.5	10.2	10.7	7.3	7.6
Tuberculosis of other organs	10.3	10.3	7.6	7.6	4.9	4.9	3.0	4.9
Syphilis and gonorrhea	20.1	16.7	13.8	15.6	11.6	10.5	8.7	5.1
Cancer	9.8	10.5	19.2	20.7	27.7	25.5	39.1	38.7
Other general diseases	12.2	14.1	16.2	19.4	19.7	20.2	27.1	27.6
Meningitis	9.6	7.2	4.2	4.7	3.5	4.2	2.5	1.3
Other diseases of nervous system	8.3	10.0	14.3	15.5	19.7	18.6	47.8	46.1
Diseases of circulatory system	6.3	6.1	10.9	11.2	18.0	18.6	58.8	58.0
Pneumonia and broncho-pneumonia	8.4	7.8	11.1	10.5	11.9	12.4	32.1	35.2
Other diseases of respiratory system	5.0	5.1	8.6	11.3	12.2	12.8	49.3	51.0
Diarrhea and enteritis, under two years								
Diarrhea and enteritis, two years and over	8.6	8.5	8.6	11.3	8.6	12.5	27.3	31.8
Other diseases of digestive system	12.9	14.4	17.0	14.3	15.3	16.2	26.1	25.2
Bright's disease and nephritis	8.7	8.7	15.0	14.9	20.6	21.3	46.7	47.2
Childbirth	28.0	26.3	0.8					
Diseases of early infancy								
Suicide	22.6	21.7	21.6	24.1	11.8	16.5	18.1	10.2
Other violence	17.2	18.0	14.9	14.9	10.6	10.1	18.6	13.7
All other causes	5.5	6.2	6.4	6.5	6.4	6.1	49.2	47.9

*Less than one-tenth of 1 per cent.

TABLE 28.—Median Age at Death, for Geographic Divisions: 1917 and 1916.

Geographic division	Median age (half older and half younger)	
	1917	1916
The state	52.0	52.5
Northern California	56.8	57.3
Coast counties	58.0	58.1
Interior counties	55.4	56.6
Central California	51.3	51.7
San Francisco	51.3	50.8
Alameda County	54.8	56.6
Other bay counties	50.1	48.1
Coast counties	57.8	57.9
Interior counties	47.5	48.4
Southern California	51.8	52.5
Los Angeles (city)	50.7	50.7
Rest of county	60.6	60.0
Other counties	47.0	49.0

TABLE 29.—Median Age at Death from Selected Causes, for California: 1917 and 1916.

Sex and cause of death	Median age (half older and half younger)	
	1917	1916
Males—All causes	52.0	52.5
Typhoid fever	29.4	27.3
Other epidemic diseases	4.7	6.9
Tuberculosis	35.9	36.3
Cancer	61.2	60.6
Diseases of—		
Nervous system	62.2	60.9
Circulatory system	68.8	68.2
Respiratory system	52.4	55.3
Digestive system	36.1	37.3
Bright's disease and nephritis	63.5	63.7
Suicide	43.4	45.4
Other violence	39.5	38.3
All other causes	30.8	31.2

TABLE 30.—Deaths from Selected Causes of Males and Females 15 Years and Over, Classified by Marital Condition, for California: 1917 and 1916.

Cause of death	Deaths 15 years and over						Females					
	Males			Females			Males			Females		
	Total	Single	Married	Widowed	Divorced	Unknown	Total	Single	Married	Widowed	Divorced	Unknown
1917.												
All causes	21,696	6,758	9,896	3,410	437	1,295	13,386	1,612	6,199	5,274	294	97
Typhoid fever	134	66	57	6	—	5	49	9	36	3	1	—
Other epidemic diseases	243	87	100	47	1	8	194	31	78	84	1	—
Tuberculosis	3,333	1,027	1,271	209	66	160	1,620	447	928	209	27	9
Cancer	1,451	324	802	251	27	47	1,620	149	854	583	30	4
Diseases of nervous system	1,986	440	992	367	50	96	1,474	133	606	702	30	13
Diseases of circulatory system	4,481	959	2,156	1,077	90	199	2,892	224	1,042	1,571	33	22
Diseases of respiratory system	2,190	708	909	414	41	118	1,256	131	463	686	10	14
Diseases of digestive system	1,314	389	680	167	27	51	840	102	422	299	11	6
Bright's disease and nephritis	1,771	419	904	367	38	66	1,214	112	551	516	24	11
Suicide	710	274	292	47	23	104	188	43	109	19	11	6
Other violence	2,397	956	914	153	44	330	526	89	234	180	19	4
All other causes	1,624	475	722	315	30	82	1,513	142	874	472	17	8
1916.												
All causes	20,762	6,334	9,476	3,286	429	1,237	12,866	1,444	5,984	5,227	217	64
Typhoid fever	116	53	49	3	5	6	54	17	32	5	—	—
Other epidemic diseases	230	60	94	49	2	15	295	10	80	110	3	2
Tuberculosis	3,213	1,497	1,242	253	49	160	1,500	404	904	211	24	7
Cancer	1,323	262	746	247	28	38	1,537	134	821	636	35	8
Diseases of nervous system	1,544	371	806	260	38	69	1,134	96	468	536	22	5
Diseases of circulatory system	4,751	1,041	2,351	1,039	86	211	3,174	235	1,093	1,788	34	19
Diseases of respiratory system	1,946	592	814	374	38	128	1,209	114	469	608	11	7
Diseases of digestive system	1,237	386	619	173	30	49	779	101	398	261	18	1
Bright's disease and nephritis	1,771	419	904	349	47	52	1,103	87	487	506	16	4
Suicide	740	243	288	69	21	119	177	42	97	25	10	3
Other violence	2,363	951	892	160	54	306	497	84	205	184	17	7
All other causes	1,518	436	689	307	31	75	1,457	118	865	466	17	1

TABLE 31.—Per Cent Distribution, by Marital Condition, of Deaths from Selected Causes of Males and Females 15 Years and Over, for California: 1917 and 1916.

Cause of death	Per cent of decedents 15 years and over											
	Males						Females					
	Single	Married	Widowed	Divorced	Unknown	Single	Married	Widowed	Divorced	Unknown	Single	Married
	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916
All causes	31.2	30.5	45.3	45.6	15.7	15.8	2.0	2.1	5.8	6.0	12.1	11.2
Typhoid fever	49.3	45.7	42.5	42.2	4.5	2.6	4.3	3.7	5.2	18.4	31.5	73.5
Other epidemic diseases	35.8	27.3	41.2	42.7	19.3	22.3	0.4	0.9	3.3	6.8	16.0	4.9
Tuberculosis	48.8	46.6	38.1	38.6	6.3	8.0	2.0	1.5	4.8	5.3	27.6	25.9
Cancer	22.3	19.8	33.3	36.5	17.3	18.7	1.9	2.1	3.2	2.9	9.2	8.7
Diseases of nervous system	22.7	24.0	31.3	32.2	18.4	16.8	2.6	2.5	5.0	4.5	9.0	8.6
Diseases of circulatory system	21.4	22.4	48.1	49.5	24.0	21.9	2.0	1.8	4.5	4.4	7.8	7.4
Diseases of respiratory system	32.3	30.4	41.5	41.8	18.9	19.2	1.9	2.0	5.4	6.6	10.4	9.4
Diseases of digestive system	29.6	30.7	51.7	49.2	12.7	13.8	2.1	2.4	8.9	3.9	12.2	13.0
Bright's diseases and nephritis	24.0	23.7	51.0	51.0	19.5	19.7	2.0	2.7	3.5	2.9	9.2	7.9
Suicide	38.6	32.9	30.9	38.9	6.6	9.3	3.2	2.8	14.7	16.1	22.9	23.7
Other violence	39.9	40.2	38.1	37.8	6.4	6.8	1.8	2.3	13.8	12.9	16.9	16.9
All other causes	29.2	28.7	44.5	44.1	19.4	20.2	1.8	2.1	5.1	4.9	8.4	8.1
											59.3	59.3
											31.2	31.3
											1.1	1.2
											0.5	0.1
											1.7	1.7
											3.2	3.2
											5.7	5.7
											3.6	3.6
											34.2	34.2
											37.0	37.0
											3.8	3.8
											0.8	0.8
											1.4	1.4
											1.1	1.1
											1.2	1.2
											0.5	0.5
											0.1	0.1

TABLE 32.—Deaths from Each Specified Disease and Class of Diseases, for Ten Minor Geographic Divisions of California: 1917.

Cause of death	The State	Northern California			Central California				Southern California		
		Coast counties	Interior counties	San Francisco	Alameda county	Other bay counties	Coast counties	Interior counties	Los Angeles city	Rest of Los Angeles County	Other counties
ALL CAUSES	42,064	2,119	2,214	7,156	3,794	1,140	2,639	7,354	6,717	3,838	5,113
I. General diseases	11,713	490	585	2,111	987	315	607	1,971	2,009	1,180	1,429
1. Typhoid fever	225	5	16	23	11	4	7	74	30	14	41
2. Typhus fever											
3. Relapsing fever											
4. Malaria	47	3	18	1	2			20	3		
5. Smallpox	13			7	2		4				
6. Measles	188		18	37	15	8	7	35	29	8	31
7. Scarlet fever	49	1	1	11	5	5	2	9	8	2	5
8. Whooping cough	200	10	8	28	10	3	12	65	19	11	34
9. (a) Diphtheria	197	6	1	66	18	6	6	35	39	9	11
(b) Croup	10		1	3				4		2	
10. Influenza	277	12	42	8	13	3	19	78	30	31	30
11. Millary fever											
12. Asiatic cholera											
13. Cholera nostras											
14. Dysentery	54		6	9	4	1	2	14	4	1	13
15. Plague											
16. Yellow fever											
17. Leprosy	6			3					2		1
18. Erysipelas	75	3	4	9	9	3	2	14	21	4	6
19. Other epidemic diseases	6		1	1				2	2		
20. Purulent infection and septicemia	98	4	6	7	12	1	14	25	9	11	8
21. Glanders											
22. Anthrax	6	1	1	2			1	1			
23. Rabies											
24. Tetanus	49		3		2	2	7	8	5	5	13
25. Mycoses	2			2							
26. Pellagra	24	2			3			8	3	2	6
27. Beriberi	6						2	1		1	
Tuberculosis											
28. Tuberculosis of the lungs	4,788	194	209	741	390	135	206	778	946	548	671
29. Acute millary tuberculosis	88	10	7	20	7	1	6	15	9	10	3
30. Tuberculous meningitis	307	13	9	56	32	6	10	58	55	19	40

31. Abdominal tuberculosis	157	15	1	11	9	2	7	38	31	13	80
32. Pott's disease	38	1	2	11	1	3	2	7	3	5	3
33. White swellings	21	1	1	1				1	5	2	10
34. Tuberculosis of other organs	43		1	8	5	1	5	7	9	5	2
35. Disseminated tuberculosis	15	1	2	3			2	5	2		
36. Rickets	13						1	1	4	1	4
37. Syphilis	298	6	8	101	22	6	11	43	53	13	35
38. Gonococcus infection	11		1	4			1	2	2		1
Cancer.											
39. Cancer* of the buccal cavity	111	10	9	31	9	3	3	13	18	9	6
40. Cancer* of the stomach, liver	1,236	57	62	299	124	31	66	177	186	110	124
41. Cancer* of the peritoneum, intestines, rectum	389	16	21	93	36	9	24	42	43	46	43
42. Cancer* of the female genital organs	429	12	13	96	46	8	24	69	104	34	23
43. Cancer* of the breast	274	7	4	60	28	11	10	33	59	40	22
44. Cancer* of the skin	83	2	3	10	6	3	10	10	20	9	10
45. Cancer* of other or unspecified organs	563	32	19	120	56	13	40	73	103	52	55
46. Other tumors (except of female genital organs)	22	1		4	2		2	1	7	2	3
47. Acute articular rheumatism	103	2	9	20	7	2	6	21	15	10	11
48. Chronic rheumatism and gout	53	6	3	8	4	1	4	5	9	8	5
49. Scurvy	5				2		1	1	1		
50. Diabetes	519	19	30	106	53	15	46	75	86	43	46
51. Exophthalmic goitre	33	3		4		1		4	10	3	5
52. Addison's disease	15	1	1	4	2		1	2	2		
53. Leucæmia	78	4	5	20	9	2	1	6	15	12	4
54. Anæmia, chlorosis	209	13	4	34	17	9	12	26	38	31	25
55. Other general diseases	23	1		1	7		3		6	1	4
56. Alcoholism (acute or chronic)	240	11	34	24	12	16	15	55	36	8	29
57. Chronic lead poisoning	6	1		2			1		1	1	1
58. Other chronic occupation poisonings	1			1							
59. Other chronic poisonings	10		1	1				5	2	1	
II. Diseases of the nervous system.											
60. Encephalitis	3,695	242	164	510	318	87	347	621	508	343	557
61. (a) Simple meningitis	35	1	1	6	1	2	2	8	5	3	6
(b) Cerebrospinal meningitis (undefined)	184	10	6	23	12	5	7	53	28	12	28
(c) Cerebrospinal fever	67	2	2	9	9	2	5	10	11	4	13
62. Locomotor ataxia	31			13				7	6		4
63. (a) Acute anterior poliomyelitis	65	7	2	10	11	3	5	8	9	3	7
(b) Other diseases of the spinal cord	26	1	5	2	3		3	3	6	3	3
64. Cerebral hemorrhage, apoplexy	194	8	13	18	15	6	16	20	35	33	21
65. Softening of the brain	2,181	121	89	346	246	56	191	344	309	210	299
	54	1	4	17	3	2	6	8	5	4	4

*Cancer and other malignant tumors.

TABLE 32.—Deaths from Each Specified Disease and Class of Diseases, for Ten Minor Geographic Divisions of California: 1917—Continued.

Cause of death	The State	Northern California			Central California			Southern California			
		Coast counties	Interior counties	San Francisco	Alameda county	Other counties	Coast counties	Interior counties	Los Angeles city	Rest of Los Angeles County	Other counties
66. Paralysis without specified cause.....	161	13	22	10	9	3	8	23	22	27	24
67. General paralysis of the insane.....	337	45	1	5	10	4	78	53	18	17	106
68. Other forms of mental alienation.....	61	4	2	3	1	1	13	18	9	4	7
69. Epilepsy.....	105	17	7	10	6	1	14	20	10	10	10
70. Convulsions (nonpuerperal).....	3										3
71. Convulsions of infants (under 5 years).....	22		1	2	3	2		4	4		6
72. Chorea.....	2			1	1			1			2
73. Neuralgia and neuritis.....	23		2	5		1	1	3	7	1	4
74. Other diseases of the nervous system.....	109	10	6	21	7	1	8	23	16	7	10
75. Diseases of the eyes and their annexa.....	5	2						1	1		1
76. Diseases of the ears.....	30			9	2		2	5	5	5	2
III. Diseases of the circulatory system.....	7,483	438	379	1,166	886	184	598	1,092	1,144	860	759
77. Pericarditis.....	62	3	2	11	17		2	10	9	2	6
78. Acute endocarditis.....	245	16	9	37	29	6	12	43	39	22	32
79. Organic diseases of the heart.....	5,322	278	291	969	649	131	413	727	616	653	496
80. Angina pectoris.....	231	14	4	41	17	7	22	37	39	22	28
81. Diseases of arteries, atheroma, aneurysm, etc.....	1,473	118	68	184	161	36	135	248	211	185	177
82. Embolism and thrombosis.....	104	4	2	16	11	2	11	11	19	13	15
83. Diseases of veins (varices, hemorrhoids, phlebitis, etc.).....	10			3	1	1			3	1	1
84. Diseases of the lymphatic system (lymphangitis, etc.).....	20	2		5		1	1	3	6	1	1
85. Hemorrhage; other diseases of the circulatory system.....	16	1	3		1		1	4	2	1	3
IV. Diseases of the respiratory system.....	4,509	266	248	896	435	144	257	862	621	844	613
86. Diseases of the nasal fossae.....	3								1		1
87. Diseases of the larynx.....	26		1	5	1	1	1	2	4	2	9
88. Diseases of the thyroid body.....	16		1	3				2	6	3	2
89. Acute bronchitis.....	148	4	5	42	11	4	7	36	20	9	20
90. Chronic bronchitis.....	229	20	15	43	17	8	20	35	27	23	21
91. Bronchopneumonia.....	1,246	53	46	331	169	36	76	289	187	84	126
92. (a) Lobar pneumonia.....	1,869	150	106	316	189	66	108	363	290	107	180
92. (b) Pneumonia (undefined).....	664	25	56	82	20	16	27	167	22	75	164
93. Pleurisy.....	112	3	4	44	6	4	5	11	24	4	7

94. Pulmonary congestion, pulmonary apoplexy	103	6	4	5	8	5	5	21	15	15	19
95. Gangrene of the lung	10			3	2	1	1		2		1
96. Asthma	96	6	6	6	6	2	8	12	16	16	18
97. Pulmonary emphysema	12		1	1	3		1	1	3	1	1
98. Other diseases of the respiratory system (tuberculosis excepted)	45	2	4	5	3	1	3	13	5	5	4
V. Diseases of the digestive system.											
99. Diseases of the mouth and annæa	3,540	153	188	528	325	72	206	686	596	287	497
100. Diseases of the pharynx	14			2	2	1	1	1	2	2	3
101. Diseases of the œsophagus	56	3	3	7	9	2	1	11	9	2	9
102. Ulcer of the stomach	7	1	1	1		1			2		1
103. Other diseases of the stomach (cancer excepted)	191	9	8	39	26	5	8	38	36	9	13
	305	17	29	13	18	6	21	52	56	43	50
Diarrhea.											
104. Diarrhea and enteritis (under 2 years)	910	19	44	71	64	22	64	209	130	79	208
105. Diarrhea and enteritis (2 years and over)	384	20	24	48	33	5	25	80	56	28	65
106. Ankylostomiasis											
107. Intestinal parasites	1										
108. Appendicitis and typhlitis	419	15	16	101	41	6	25	77	77	25	38
109. (a) Hernia	110	6	4	23	14	2	2	17	22	7	13
(b) Intestinal obstruction	310	21	16	50	37	6	20	50	66	19	25
110. Other diseases of the intestines	61	3	3	2	9	1	5	12	16	8	2
111. Acute yellow atrophy of the liver	18		2	6	1		1	1	3	2	2
112. Hydatid tumor of the liver	1										1
113. Cirrhosis of the liver	451	23	22	118	47	9	19	78	67	32	36
114. Biliary calculi	63	2	2	15	5	1	5	8	10	6	9
115. Other diseases of the liver	182	8	11	20	11	3	8	29	31	14	17
116. Diseases of the spleen	4	1		1					1	1	
117. Simple peritonitis (nonpuerperal)	57	4	1	1	8	2	3	14	10	8	6
118. Other diseases of digestive system (except cancer, tuberculosis)	26	1	2	10				8	2	2	1
VI. Diseases of genito-urinary system.											
119. Acute nephritis	3,744	201	160	816	308	82	216	550	654	375	373
120. Bright's disease	273	19	10	58	31	4	12	34	55	15	35
121. Chyluria	2,915	155	130	615	286	60	164	437	481	300	298
122. Other diseases of the kidneys and annæa	87	3	3	24	4	2	10	11	15	9	6
123. Calculi of the urinary passages	11	3	1	2				1	1	1	2
124. Diseases of the bladder	95	9	2	5	8	2	11	14	17	14	13
125. Diseases of the urethra, urinary abscess, etc.	7		1					4	1		1
126. Diseases of the prostate	173	5	11	18	14	2	15	22	38	24	24
127. Nonvenereal diseases of male genital organs	1							1			
128. Uterine hemorrhage (nonpuerperal)	1										1

TABLE 32.—Deaths from Each Specified Disease and Class of Diseases, for Ten Minor Geographic Divisions of California: 1917—Continued.

Cause of death	The State	Northern California			Central California				Southern California		
		Coast counties	Interior counties	San Francisco	Alameda county	Other counties	Coast counties	Interior counties	Los Angeles city	Rest of Los Angeles County	Other counties
129. Uterine tumor (noncancerous).....	67	3	1	11	7	—	—	11	22	5	7
130. Other diseases of the uterus.....	34	—	—	5	4	1	2	8	7	5	7
131. Cysts and other tumors of the ovary.....	25	2	—	11	2	—	—	5	4	1	3
132. Salpingitis and other diseases of female genital organs.....	51	2	—	16	2	2	2	7	13	1	6
133. Nonpuerperal diseases of the breast (cancer excepted).....	1	—	1	—	—	—	—	—	—	—	—
VII. The puerperal state.....											
134. Accidents of pregnancy.....	389	12	17	61	36	6	22	89	70	23	53
135. Puerperal hemorrhage.....	117	4	6	16	14	2	8	22	17	8	20
136. Other accidents of labor.....	33	2	1	6	4	—	—	2	3	5	6
137. Puerperal septicemia and convulsions.....	50	—	5	11	5	1	3	11	8	3	3
138. Puerperal albuminuria and embolus.....	82	2	3	6	6	2	3	24	19	4	13
139. Puerperal phlegmasia alba dolens, embolus, sudden death.....	99	4	2	21	5	1	6	23	20	4	8
140. Following childbirth (not otherwise defined).....	5	—	—	1	1	—	—	1	1	—	2
141. Puerperal diseases of the breast.....	3	—	—	—	1	—	—	1	—	—	—
VIII. Diseases of the skin.....											
142. Gangrene.....	124	8	5	15	10	4	4	22	27	9	20
143. Furuncle.....	54	5	1	8	2	1	3	11	10	5	8
144. Acute abscess.....	18	1	—	1	2	1	—	4	5	1	3
145. Other diseases of the skin and annexa.....	27	1	1	5	1	1	1	7	5	1	4
IX. Diseases of the bones.....	25	1	3	1	5	1	—	—	7	2	5
146. Diseases of the bones (tuberculosis excepted).....	75	2	5	17	2	2	5	17	11	7	7
147. Diseases of the joints (except tuberculosis and rheumatism).....	65	2	5	16	1	2	4	15	8	6	6
148. Amputations.....	5	—	—	1	1	—	1	—	1	1	—
149. Other diseases of the organs of locomotion.....	2	—	—	—	—	—	—	—	—	—	—
X. Malformations.....	3	—	—	—	—	—	—	—	—	—	—
150. (a) Hydrocephalus.....	355	12	24	51	40	13	28	65	59	19	44
(b) Congenital malformation of the heart.....	23	—	1	5	3	—	—	2	6	3	2
(c) Other congenital malformations.....	200	7	18	36	24	10	17	42	38	10	20
	107	5	5	10	13	3	9	17	23	7	13

XI. Diseases of early infancy.....	1,575	62	80	206	158	43	104	357	230	119	916
151. (a) Premature birth (not stillborn).....	963	36	40	133	96	26	64	223	149	78	118
(b) Congenital debility, "atrophy," "marasmus," etc.	312	16	17	10	35	12	19	80	43	25	55
152. Other diseases peculiar to early infancy.....	271	7	23	61	24	3	18	44	38	15	38
153. Lack of care.....	29	3	---	2	3	2	3	10	---	1	5
XII. Old age.....	428	18	39	64	14	10	31	92	86	40	34
154. Senility.....	428	18	39	64	14	10	31	92	86	40	34
XIII. Affections produced by external causes.....	4,327	212	306	722	293	177	211	910	610	280	946
155. Suicide by poison.....	148	2	5	29	16	7	8	16	41	16	5
156. Suicide by asphyxia.....	129	1	---	67	17	1	3	4	26	4	6
157. Suicide by hanging or strangulation.....	74	11	8	8	5	2	5	19	8	5	3
158. Suicide by drowning.....	44	1	4	10	3	3	4	11	2	4	2
159. Suicide by firearms.....	395	27	26	68	29	14	21	62	71	29	45
160. Suicide by cutting or piercing instruments.....	80	5	2	11	6	1	8	23	12	5	7
161. Suicide by jumping from a high place.....	12	1	---	4	1	---	---	1	4	---	---
162. Suicide by crushing.....	10	1	1	1	2	---	---	3	---	1	1
163. Other suicides.....	6	---	---	---	---	---	1	3	2	---	---
164. Poisoning by food.....	52	2	4	1	1	1	7	12	5	2	17
165. Other acute poisonings.....	64	---	3	6	6	1	5	14	11	3	15
166. Conflagration.....	73	13	4	9	4	4	6	15	3	2	13
167. Burns (conflagration excepted).....	190	13	15	27	13	4	12	38	33	11	24
168. Absorption of deleterious gases (conflagration excepted).....	130	2	4	66	9	4	2	5	20	5	13
169. Accidental drowning.....	322	23	36	40	18	23	7	98	17	25	31
170. Traumatism by firearms.....	85	5	9	6	1	1	5	29	3	7	30
171. Traumatism by cutting or piercing instruments.....	2	---	---	2	---	---	---	---	---	---	---
172. Traumatism by fall.....	349	16	20	98	34	17	21	60	54	40	39
173. Traumatism in mines and quarries.....	37	2	6	1	---	---	---	1	24	1	1
174. Traumatism by machines.....	78	3	9	16	9	2	3	13	11	2	10
175. (a) Railroad accidents and injuries.....	346	11	52	21	24	19	20	84	34	40	41
(b) Street car accidents and injuries.....	160	1	2	41	9	2	3	7	23	6	6
(c) Automobile accidents and injuries.....	630	18	25	78	42	36	28	137	117	38	101
(d) Injuries by other vehicles.....	133	5	10	12	7	5	9	45	19	3	15
(e) Landslide, other crushing.....	45	8	6	13	1	1	2	5	4	1	4
176. Injuries by animals.....	46	5	6	3	1	---	5	13	5	1	7
177. Starvation.....	13	1	3	---	---	---	1	3	2	---	3
178. Excessive cold.....	7	1	1	---	---	---	---	2	---	1	1
179. Effects of heat.....	106	3	5	---	---	---	2	13	5	1	77
180. Lightning.....	---	---	---	---	---	---	---	---	---	---	---
181. Electricity (lightning excepted).....	49	4	2	5	4	4	1	14	3	4	5

*This title includes only deaths under 3 months of age.

TABLE 32.—Deaths from Each Specified Disease and Class of Diseases, for Ten Minor Geographic Divisions of California: 1917—Continued.

Cause of death	The State	Northern California			Central California				Southern California		
		Coast counties		Interior counties	San Francisco	Alameda county	Other bay counties	Coast counties	Interior counties	Los Angeles city	Rest of Los Angeles County
182. Homicide by firearms.....	286	10	15	33	16	4	15	83	44	17	49
183. Homicide by cutting or piercing instruments.....	42	1	1	6	2	1	1	14	8	3	9
184. Homicide by other means.....	61	—	3	15	6	1	1	10	11	3	11
185. Fractures (cause not specified).....	14	—	—	6	—	—	—	2	1	—	4
186. Other external violence.....	128	16	17	10	7	18	5	33	10	3	9
XIV. Ill-defined diseases.....											
187. Ill-defined organic disease.....	37	2	5	3	2	1	1	10	4	3	6
188. Sudden death.....	1	—	—	—	—	—	—	—	—	—	1
189. (a) Cause of death ill-defined.....	36	2	5	3	2	1	1	10	4	3	5
(b) Cause of death not specified, or unknown.....	—	—	—	—	—	—	—	—	—	—	—

TABLE 33.—Deaths from Each Specified Disease and Class of Disease, for Ten Minor Geographic Divisions of California: 1916.

Cause of death	The State	Northern California			Central California				Southern California		
		Coast counties	Interior counties	San Francisco	Alameda county	Other bay counties	Coast counties	Interior counties	Los Angeles city	Rest of Los Angeles County	Other counties
ALL CAUSES	39,860	2,145	2,005	7,163	3,570	1,057	2,608	6,506	6,224	3,814	4,768
I. General diseases	11,103	506	515	2,056	946	253	626	1,712	1,989	1,153	1,397
1. Typhoid fever	208	7	17	16	22	6	13	56	14	18	40
2. Typhus fever	2							1	1		
3. Relapsing fever											
4. Malaria	54		11	4	1		1	28		1	8
5. Smallpox	12				1	2			2		4
6. Measles	41	3		3	2			10	8	2	13
7. Scarlet fever	34	2	2	8		2	2	11	4	1	2
8. Whooping cough	197	2	6	19	8	5	5	19	41	46	46
9. (a) Diphtheria	296	1	10	132	33	7	16	43	20	7	17
(b) Group	4							1		1	2
10. Influenza	289	21	36	15	19	5	20	67	27	32	47
11. Miliary fever											
12. Asiatic cholera											
13. Cholera nostras											
14. Dysentery	53	7	7	1	3	1	4	17	5	3	10
15. Plague											
16. Yellow fever											
17. Leprosy											
18. Erysipelas	67	3	6	14	6	2	4	12	16	1	3
19. Other epidemic diseases	8	1	1	1	1				1	4	
20. Purulent infection and septicaemia	68	3	3	10	6	2	7	14	8	7	8
21. Glanders	1										1
22. Anthrax	1				1						
23. Rabies	1										
24. Tetanus	46	2	1	2	4	2	2	14	13	1	5
25. Mycoses	1										
26. Pellagra	25	2		1				3	5	5	5
27. Beriberi	8			1	1	1		1			
Tuberculosis.											
28. Tuberculosis of the lungs	4,608	108	194	778	347	93	239	679	875	549	66
29. Acute miliary tuberculosis	86	5	3	20	6	2	2	16	11	7	13
30. Tuberculous meningitis	291	12	11	56	41	12	15	40	45	21	38

TABLE 33.—Deaths from Each Specified Disease and Class of Disease, for Ten Minor Geographic Divisions of California: 1916—Continued.

Cause of death	The State	Northern California			Central California				Southern California		
		Coast counties	Interior counties	San Francisco	Alameda county	Other bay counties	Coast counties	Interior counties	Los Angeles city	Rest of Los Angeles County	Other counties
31. Abdominal tuberculosis	156	14	6	25	10	5	9	35	18	11	23
32. Pott's disease	34	1	1	10	3	1	1	6	5	1	5
33. White swellings	14	1	1	1	4	2	1	2	2		1
34. Tuberculosis of other organs	66	5	7	7	6	1	5	9	12	6	11
35. Disseminated tuberculosis	10	1		3	1			1	1		3
36. Rickets	13	1		7	1				3		1
37. Syphilis	270	11	5	71	27	7	5	53	44	15	32
38. Gonococcus infection	6		2	1			1		1		1
39. Cancer.											
39. Cancer* of the buccal cavity	109	6	6	37	8	1	5	17	17	7	5
40. Cancer* of the stomach, liver	1,163	61	54	240	124	24	76	147	209	118	110
41. Cancer* of the peritoneum, intestines, rectum	384	16	21	83	40	8	30	46	61	36	43
42. Cancer* of the female genital organs	388	13	10	90	34	8	25	55	77	38	38
43. Cancer* of the breast	291	4	8	55	29	10	8	33	62	29	23
44. Cancer* of the skin	81	6	4	6	5	2	8	15	12	13	10
45. Cancer* of other or unspecified organs	498	23	21	98	48	11	41	55	94	57	45
46. Other tumors (except of female genital organs)	6	2		1	1		1	1			1
47. Acute articular rheumatism	105	7	4	20	14	1	5	21	13	5	15
48. Chronic rheumatism and gout	45	5	6	4	2	1	5	4	11	3	4
49. Scurvy	1			1							
50. Diabetes	487	27	11	99	42	15	40	60	99	45	40
51. Exophthalmic goitre	42	2	2	9	4	1	2	7	6	5	4
52. Addison's disease	11			2	1		1	2	2	2	
53. Leuchemia	78	6	2	19	5	1	2	10	13	6	9
54. Anemia, chlorosis	197	2	6	41	20	1	8	20	43	33	23
55. Other general diseases	17	3		2		1	1	1	4	2	2
56. Alcoholism (acute or chronic)	200	19	26	37	18	11	16	55	31	11	36
57. Chronic lead poisoning	8	1	1	2				1	1	1	1
58. Other chronic occupation poisonings											
59. Other chronic poisonings	10	2		1		1	1	3	2	1	

*Cancer and other malignant tumors.

II. Diseases of the nervous system.									
60. Encephalitis	2,928	206	132	397	263	61	302	457	488
(a) Simple meningitis	35	1	1	5	5	1	4	4	4
(b) Cerebrospinal meningitis (undefined)	161	6	2	21	17	5	8	32	31
(c) Cerebrospinal fever	60	3	1	5	4	3	2	9	13
62. Locomotor ataxia	15	2	1	2	1	1	1	1	1
63. (a) Acute anterior poliomyelitis	89	5	1	23	6	2	5	10	14
(b) Other diseases of the spinal cord	24	3	3	4	---	---	2	5	3
64. Cerebral hemorrhage, apoplexy	172	7	6	21	17	4	17	31	26
65. Softening of the brain	1,533	87	88	237	168	35	125	238	190
66. Paralysis without specified cause	39	1	---	11	4	---	3	3	5
67. General paralysis of the insane	134	8	8	5	9	1	16	21	24
68. Other forms of mental alienation	277	53	3	6	8	2	65	36	90
69. Epilepsy	72	---	---	1	5	---	24	16	7
70. Convulsions (nonperpetual)	115	18	7	13	14	3	11	21	12
71. Convulsions of infants (under 5 years)	3	---	---	---	1	---	---	---	---
72. Chorea	12	1	1	1	1	---	2	4	2
73. Neuralgia and neuritis	5	1	---	---	1	---	---	---	1
74. Other diseases of the nervous system	13	1	---	---	---	---	1	3	5
75. Diseases of the eyes and their annexa	140	11	8	36	6	2	9	25	16
76. Diseases of the ears	4	---	2	1	---	---	1	1	2
III. Diseases of the circulatory system.									
77. Pericarditis	8,040	453	418	1,326	984	219	582	1,017	940
78. Acute endocarditis	170	3	2	13	17	---	5	13	2
79. Organic diseases of the heart	319	29	23	42	27	15	12	47	37
80. Angina pectoris	5,550	268	299	1,130	646	164	396	677	530
81. Diseases of arteries, atheroma, aneurysm, etc.	225	11	10	41	14	2	27	19	21
82. Embolism and thrombosis	1,741	118	75	281	178	46	137	230	218
83. Diseases of veins (varices, hemorrhoids, phlebitis, etc.)	82	3	5	10	10	1	2	19	17
84. Diseases of the lymphatic system (lymphangitis, etc.)	23	1	2	6	1	1	2	2	3
85. Hemorrhage; other diseases of the circulatory system	13	---	1	3	---	---	1	6	1
86. Diseases of the respiratory system	11	---	1	---	1	---	---	4	2
IV. Diseases of the respiratory system.									
87. Diseases of the nasal fossae	4,134	267	235	807	429	112	248	761	466
88. Diseases of the larynx	17	1	---	5	1	---	3	4	1
89. Diseases of the thyroid body	13	1	2	2	1	---	1	1	2
90. Acute bronchitis	56	5	4	20	9	1	8	17	4
91. Chronic bronchitis	265	20	13	40	33	3	10	40	32
Bronchopneumonia	1,392	74	33	303	173	36	67	178	110

TABLE 33.—Deaths from Each Specified Disease and Class of Disease, for Ten Minor Geographic Divisions of California: 1916—Continued.

Cause of death	The State	Northern California					Central California					Southern California		
		Coast counties	Interior counties	San Francisco	Alameda county	Other bay counties	Coast counties	Interior counties	Los Angeles city	Rest of Angeles County	Other counties			
92. (a) Lobar pneumonia	1,570	119	86	337	156	41	88	293	228	96	129			
(b) Pneumonia (undefined)	560	87	53	44	29	20	37	162	15	67	96			
93. Pleurisy	102	1	7	35	9	3	7	10	14	7	6			
94. Pulmonary congestion, pulmonary apoplexy	50	2	2	5	4	1	3	16	6	2	9			
95. Gangrene of the lung	5			2				3						
96. Asthma	108	8	6	8	5	3	10	24	11	15	13			
97. Pulmonary emphysema	6		2	1	1					1	1			
98. Other diseases of the respiratory system (tuberculosis excepted)	51	1	7	5	8	1	3	12	6	3	5			
V. Diseases of the digestive system	3,182	153	146	527	243	66	189	619	545	288	404			
99. Diseases of the mouth and annexa	20			4	1		2	5	5		3			
100. Diseases of the pharynx	79	6	6	12	4	2	2	14	15	12	6			
101. Diseases of the esophagus	7	2		1					1	1	2			
102. Ulcer of the stomach	182	12	10	35	18	7	12	36	26	13	13			
103. Other diseases of the stomach (cancer excepted)	126	9	6	8	10	5	9	21	25	14	15			
Diarrhea.														
104. Diarrhea and enteritis (under 2 years)	792	18	24	76	46	16	54	192	186	88	147			
105. Diarrhea and enteritis (2 years and over)	434	27	25	44	25	11	25	84	86	49	58			
106. Ankylostomiasis														
107. Intestinal parasites	2			1			1							
108. Appendicitis and typhilitis	403	24	17	95	30	7	15	73	71	22	40			
109. (a) Hernia	101	3	3	22	9	1	5	20	13	4	12			
(b) Intestinal obstruction	267	9	14	52	33	7	11	39	52	24	27			
Other diseases of the intestines	56	5	7	8	4	2	3	5	12	3	7			
110. Acute yellow atrophy of the liver	1			2	1			2		1	2			
111. Hydatid tumor of the liver	8			1										
112. Cirrhosis of the liver	416	20	19	127	38	5	24	67	48	33	35			
113. Biliary calculi	89	6	4	14	2	1	10	17	14	8	18			
114. Other diseases of the liver	180	6	7	17	11	1	12	25	23	15	13			
115. Diseases of the spleen	7		1	1			1	1		3				
116. Simple peritonitis (nonpuerperal)														
117. Simple peritonitis (puerperal)	42	6	2	2	1	2	2	8	11	2	6			
Other diseases of digestive system (except cancer, tuberculosis)	20	1	1	3	1		1	1	1		3			

VI. Diseases of genito-urinary system-----											
119. Acute nephritis	3,478	192	145	604	263	64	218	518	648	417	317
120. Bright's disease	161	12	4	38	12	5	9	21	33	12	15
121. Chyuria	2,761	152	109	558	210	48	161	424	492	384	253
122. Other diseases of the kidneys and annexa.....	75	4	5	20	4	1	7	10	14	3	7
123. Calculi of the urinary passages.....	15	1	1	4	2	1	1	3	2	1	1
124. Diseases of the bladder.....	121	13	8	10	6	3	15	16	19	21	10
125. Diseases of the urethra, urinary abscess, etc.....	11			2	1	2	1		5		
126. Diseases of the prostate.....	120	6	7	18	9	3	14	16	22	14	11
127. Nonvenereal diseases of male genital organs.....	3			1					2		
128. Uterine hemorrhage (nonpuerperal).....	56	2	3	9	8		1	6	19	3	5
129. Uterine tumor (noncancerous).....	37	1	2	5	1		5	5	12	2	4
130. Other diseases of the uterus.....	32		4	9	1		1	5	7	3	2
131. Oysts and other tumors of the ovary.....											
132. Salpingitis and other diseases of female genital organs.....	84	1	3	22	9	1	3	12	21	4	8
133. Nonpuerperal diseases of the breast (cancer excepted)	2					1					1
VII. The puerperal state.....											
134. Accidents of pregnancy.....	346	15	21	50	26	14	24	68	63	29	46
135. Puerperal hemorrhage.....	107	5	7	19	6	4	7	14	24	6	15
136. Other accidents of labor.....	34	2	2	3	4	5	1	9	4	3	1
137. Puerperal septichæmia.....	46	3	3	6	3	1	5	8	4	5	5
138. Puerperal albuminuria and convulsions.....	107	5	5	15	11	2	5	6	8	5	6
139. Puerperal phlegmasia alba dolens, embolus, sudden death.....	8			1			1	1	2	2	1
140. Following childbirth (not otherwise defined).....	4		1					1		2	
141. Puerperal diseases of the breast.....											
VIII. Diseases of the skin.....											
142. Gangrene.....	106	5	7	18	13	2	13	12	16	8	12
143. Furuncle.....	34	2	3	2	4	1	7	2	3	4	6
144. Acute abscess.....	19	1		3	4		3	2	4	1	1
145. Other diseases of the skin and annexa.....	29	1	2	6	4		2	4	6	1	3
	24	1	2	7	1	1	1	4	3	2	2
IX. Diseases of the bones.....											
146. Diseases of the bones (tuberculosis excepted).....	62	2	2	14	4		5	9	14	5	7
147. Diseases of the joints (except tuberculosis and rheumatism).....	47	1	1	11	2		2	8	13	3	6
148. Amputations.....	10	1		3	2		1	1	1	1	1
149. Other diseases of the organs of locomotion.....	2		1								
	3						2			1	

TABLE 33.—Deaths from Each Specified Disease and Class of Disease, for Ten Minor Geographic Divisions of California: 1916—Continued.

Cause of death	The State	Northern California			Central California				Southern California		
		Coast counties	Interior counties	San Francisco	Alameda county	Other bay counties	Coast counties	Interior counties	Los Angeles city	Rest of Los Angeles County	Other counties
X. Malformations	341	16	13	49	37	13	23	70	42	31	41
(a) Hydrocephalus	27	4	—	2	2	1	1	5	2	2	2
(b) Congenital malformation of the heart	215	7	10	32	27	9	13	54	21	19	25
(c) Other congenital malformations	90	5	3	15	8	3	9	17	13	10	16
XI. Diseases of early infancy	1,705	62	70	202	138	56	105	342	217	117	198
(a) Premature birth (not stillborn)	923	35	42	120	91	34	61	201	146	76	115
(b) Congenital debility, "atrophy," "marasmus," etc.	312	19	10	25	24	9	23	87	41	28	47
(c) Other diseases peculiar to early infancy	294	8	18	57	16	13	21	52	30	16	33
153. Lack of care	6	—	—	1	—	—	—	2	—	—	—
XII. Old age	428	23	34	44	30	9	34	90	57	47	47
154. Senility	428	23	34	44	30	9	34	90	57	47	47
XIII. Affections produced by external causes	4,194	243	267	772	290	185	238	624	530	269	547
155. Suicide by poison	156	5	6	96	11	4	8	16	41	12	17
156. Suicide by asphyxia	123	—	—	70	14	1	3	5	18	3	9
157. Suicide by hanging or strangulation	82	12	3	10	11	3	6	12	11	6	4
158. Suicide by drowning	55	3	2	12	8	1	2	17	2	7	1
159. Suicide by firearms	394	21	21	86	31	11	34	53	54	29	50
160. Suicide by cutting or piercing instruments	68	4	2	10	5	—	7	18	7	4	11
161. Suicide by jumping from a high place	23	1	—	11	—	—	—	2	8	1	—
162. Suicide by crushing	9	—	—	—	4	—	1	2	—	—	—
163. Other suicides	7	—	1	—	—	—	—	—	—	—	—
164. Poisoning by food	84	1	4	2	1	1	1	6	4	8	11
165. Other acute poisonings	68	7	5	13	6	1	4	13	9	3	9
166. Conflagration	65	8	4	6	5	—	10	19	4	1	8
167. Burns (conflagration excepted)	156	8	10	20	13	10	10	30	20	13	22
168. Absorption of deleterious gases (conflagration excepted)	—	—	—	—	—	—	—	—	—	—	—
169. Accidental drowning	185	2	1	40	4	3	2	10	12	6	6
170. Traumatism by firearms	599	37	92	36	19	30	21	103	15	29	71
171. Traumatism by cutting or piercing instruments	98	8	7	5	3	2	6	24	7	8	23
172. Traumatism by fall	414	4	—	—	—	—	—	1	—	1	2
		25	—	110	20	6	18	64	63	29	60

*This title includes only deaths under 8 months of age.

173. Traumatism in mines and quarries.....	53	4	12	4	2	2	3	23	1	1	1
174. Traumatism by machines.....	74	8	7	18	6	2	5	13	7	2	6
175. (a) Railroad accidents and injuries.....	306	12	34	15	28	27	18	67	42	20	43
(b) Street car accidents and injuries.....	90	2	2	33	10	2	4	6	21	3	9
(c) Automobile accidents and injuries.....	523	15	18	65	37	33	34	98	94	48	81
(d) Injuries to other vehicles.....	160	12	6	21	12	14	12	41	12	15	15
(e) Landslide, or other crushing	86	17	13	16	3	4	2	14	6	1	10
Injuries by animals.....	49	7	5	2	1	2	3	20	2	2	5
176. Starvation.....	7	2	3	1	1	2	1	3	1	1	1
177. Excessive cold.....	11	2	3	1	4	2	7	2	1	4	4
178. Effects of heat.....	24	1	1	2	3	2	3	17	4	1	15
180. Lightning.....	39	2	2	2	3	2	3	17	4	4	4
181. Electricity (lightning excepted).....	242	9	16	48	11	3	12	60	30	9	44
182. Homicide by firearms.....	49	2	7	5	1	1	2	5	6	4	16
183. Homicide by cutting or piercing instruments.....	68	1	6	18	4	3	3	14	8	2	9
184. Homicide by other means.....	10	7	17	2	7	9	3	2	3	5	19
185. Fractures (cause not specified).....	116	7	17	10	7	9	3	34	8	5	19
186. Other external violence.....	13	1	1	1	1	1	1	2	1	1	6
XIV. Ill-defined diseases.....	2	1	1	1	1	1	1	1	1	1	1
187. Ill-defined organic disease.....	2	1	1	1	1	1	1	1	1	1	1
188. Sudden death.....	8	1	1	1	1	1	1	2	1	1	3
189. (a) Cause of death ill-defined.....	8	1	1	1	1	1	1	2	1	1	3
(b) Cause of death not specified, or unknown.....	3	1	1	1	1	1	1	1	1	1	2

TABLE 34.—Deaths from Certain Principal Causes.

Cause of death	The State	Alameda	Albino	Amador	Butte	Calaveras
1917						
All causes	42,084	3,794		141	415	100
Typhoid fever	225	11		1	4	1
Malarial fever	47	2			6	
Smallpox	13	2				
Measles	188	15			6	
Scarlet fever	49	5				
Whooping cough	200	10				
Diphtheria and croup	207	18				
Influenza	277	18		2	12	1
Other epidemic diseases	141	13			3	
Tuberculosis of lungs	4,788	300		16	36	12
Tuberculosis of other organs	660	54		2	3	1
Syphilis and gonorrhea	309	22			1	2
Cancer	3,085	306		11	42	2
Other general diseases	1,515	132		2	21	3
Meningitis	282	21			1	
Other diseases of nervous system	3,413	297		8	21	8
Diseases of circulatory system	7,483	886		25	72	13
Pneumonia and broncho-pneumonia	3,799	373		11	30	13
Other diseases of respiratory system	900	57		5	5	2
Diarrhea and enteritis, under 2 years	910	64		5	12	2
Diarrhea and enteritis, 2 years and over	384	33			1	2
Other diseases of digestive system	2,246	228		8	28	5
Bright's disease and nephritis	3,188	267		16	33	7
Childbirth	389	36			5	1
Diseases of early infancy	1,575	158		3	15	2
Suicide	896	79		5	9	5
Other violence	3,429	214		19	25	13
All other causes	1,575	100		2	12	5
1916						
All causes	39,980	3,570	1	152	347	76
Typhoid fever	208	22		3	4	
Malarial fever	54	1			2	3
Smallpox	12	1				
Measles	41	2				
Scarlet fever	34					
Whooping cough	197	8		1		
Diphtheria and croup	290	33		3	1	1
Influenza	289	19		3	9	
Other epidemic diseases	135	10			4	
Tuberculosis of lungs	4,608	347		18	30	13
Tuberculosis of other organs	659	69			5	
Syphilis and gonorrhea	276	27		1	2	1
Cancer	2,879	288		7	25	4
Other general diseases	1,421	119		5	9	2
Meningitis	236	23			1	
Other diseases of nervous system	2,692	247		9	25	7
Diseases of circulatory system	8,040	894	1	26	77	12
Pneumonia and broncho-pneumonia	3,432	358		12	41	4
Other diseases of respiratory system	702	71		2	5	3
Diarrhea and enteritis, under 2 years	792	46		5	5	1
Diarrhea and enteritis, 2 years and over	434	25		3	5	1
Other diseases of digestive system	1,956	172		8	20	7
Bright's disease and nephritis	2,922	222		9	18	5
Childbirth	346	28		2	5	
Diseases of early infancy	1,505	136		6	11	1
Suicide	917	84		3	3	1
Other violence	3,277	196		22	25	10
All other causes	1,506	125		4	15	

for Counties, Arranged Alphabetically: 1917 and 1916.

Colusa	Contra Costa	Del Norte	El Dorado	Fresno	Glenn	Humboldt	Imperial	Inyo	Kern	Kings	Lake	Lassen	Los Angeles
120	454	28	127	1,344	66	392	380	54	548	258	61	68	10,555
2	2		3	17		1	8	2	6	4			44
			2	5	2	1			5	1			3
	1		1	7	1		4	1	2	4			37
			1	3		1							10
	3			22		7	4		2				30
1	4			10		2			3	1			50
2	2	1	3	14	1	2	3		4	1	1		61
	3			7		1	1		2	2	1		34
12	31	5	11	153	5	26	48	4	66	30	6	4	1,494
	7	1		25		11	8		12	6	3	2	168
	2			9		1	6	1	2				68
5	21	3	10	71	6	18	8	1	25	17	5	3	849
9	20		4	51	7	10	6	2	17	7	4	2	390
	4			10		4	2		11	2	1	1	61
16	27	2	4	73	4	24	16	3	38	20	4	4	788
21	69	4	30	180	6	91	18	11	48	35	10	9	1,994
13	59		8	149	8	23	36	7	44	17	4	8	765
1	14		5	12		7	8	1	12	4	1		200
4	13		1	61	1	5	24		18	13	2	1	209
1	2	2		15	1	1	4		4	1	4		84
4	20	2	4	76	3	28	10	5	41	19	2	4	500
1	29	3	16	75	4	29	19	3	28	9	2	7	861
	2			20		5	5	1	10	3			93
2	26		2	90	2	22	30	2	25	13	4	3	349
4	5	1		19		9	12	2	14	2		2	231
17	74	3	11	125	11	47	93	5	93	27	4	13	659
5	14	1	11	46	4	18	7	3	16	15	3	5	443
91	436	36	152	1,116	76	422	319	45	564	208	71	66	10,088
	4		1	12	1		8	1	9	2	1		32
			5	5			3		3				1
	2			1					1				3
				1			5		6				10
				4		1			1	1			5
	3	1		5			2		3				87
2	5	1		10			2		3	2			28
	3	1		21		3	1			5	2	1	59
	1		1	8	1				3		1	1	31
11	24	2	12	137	3	40	46	3	56	17	3	3	1,424
2	9	1	1	18	1	15	6	1	18	2	1	3	140
	3		1	12		3	3		5	2	1	1	60
5	27	3	12	62	5	24	6	3	23	12	2	4	830
7	17	2	6	31	3	20	13		19	7	4	9	382
	4			10		1	1		3	1			60
4	20	4	7	62	7	24	11	5	19	11	2	9	607
16	86	5	44	150	17	60	17	7	73	29	13	21	2,071
5	50	2	13	108	11	29	32	2	42	20	8	5	711
2	5	1	6	17		8	3	1	10	8	5	1	153
2	6		2	61	2	4	28	2	16	10	2	1	219
	2		1	11	1	3	4	1	10	3	2	1	135
4	16	4	7	56	2	22	16	4	30	11	3	7	479
6	20	3	12	75	8	28	10	3	31	11	4	7	801
	5		1	7		3	8		5	5	2		92
3	20		4	68	5	17	21		32	16	1	6	334
4	8	1	1	18	1	5	8	2	13	2	2	5	207
14	85	3	11	111	5	61	60	5	101	16	7	16	591
4	11	1	4	36	3	22	10	5	29	13	5	6	396

TABLE 34.—Deaths from Certain Principal Causes, for Counties.

Cause of death	Madera	Marin	Mariposa	Mendocino	Merced	Modoc
1917						
All causes	114	321	39	325	182	44
Typhoid fever				1	1	
Malarial fever						1
Smallpox						
Measles	1	5				
Scarlet fever		5			1	
Whooping cough	6		1	1	2	
Diphtheria and croup		1		4		1
Influenza		1		2	5	
Other epidemic diseases					1	3
Tuberculosis of lungs	8	55	2	42	15	5
Tuberculosis of other organs	5	3		4	2	1
Syphilis and gonorrhea		2		3	2	
Cancer	6	30	2	15	6	1
Other general diseases	5	11	1	12	9	4
Meningitis	3	1		2	2	
Other diseases of nervous system	8	25	2	36	15	3
Diseases of circulatory system	11	54	6	56	21	5
Pneumonia and broncho-pneumonia	10	29	3	43	25	2
Other diseases of respiratory system	1	6	1	5	4	
Diarrhea and enteritis, under 2 years	4	2		4	9	2
Diarrhea and enteritis, 2 years and over	3	1	1	2	1	
Other diseases of digestive system	5	9	4	14	8	1
Bright's disease and nephritis	6	20	1	26	10	4
Childbirth	2	3		2	1	1
Diseases of early infancy	12	9		7	15	5
Suicide	2	9	1	11	4	1
Other violence	14	28	13	23	16	3
All other causes	2	12	1	6	7	1
1916						
All causes	115	284	41	359	200	41
Typhoid fever	1			1		
Malarial fever					3	
Smallpox						
Measles				3		
Scarlet fever					1	
Whooping cough					1	
Diphtheria and croup	1				1	
Influenza		1		2	1	
Other epidemic diseases		1	1	1	1	1
Tuberculosis of lungs	11	38	2	41	25	
Tuberculosis of other organs	1	5		5	4	
Syphilis and gonorrhea	1	3		1	4	
Cancer	10	16	2	13	12	2
Other general diseases	6	10	4	11	9	3
Meningitis		2		2	3	
Other diseases of nervous system	3	14	2	50	4	4
Diseases of circulatory system	21	59	5	56	30	10
Pneumonia and broncho-pneumonia	14	21	4	34	26	
Other diseases of respiratory system	2	3		4	1	1
Diarrhea and enteritis, under 2 years	2	3		4	8	
Diarrhea and enteritis, 2 years and over	1	1	1	8		1
Other diseases of digestive system	3	10	2	19	6	5
Bright's disease and nephritis	9	12	2	27	12	1
Childbirth		4	1	1	2	
Diseases of early infancy	10	13	1	13	8	3
Suicide	4	5		12	3	2
Other violence	14	31	11	40	27	4
All other causes	1	12	3	11	8	4

Arranged Alphabetically: 1917 and 1916--Continued.

Mono.	Monterey	Napa	Nevada	Orange	Pierce	Plumas	Riverside	Sacramento	San Benito	San Bernardino	San Diego	San Francisco	San Joaquin
4	337	546	205	652	253	83	582	1,417	104	1,274	1,431	7,156	1,378
	1		1	3	2		6	11	1	8	10	23	13
		1				1		2				1	
			1				2	7	3	5	13	37	2
	1						1	2			3	11	
	2			7			11	9		9	1	28	2
	1			1				8		1	6	69	12
	2		2	6	1	1	4	7	2	9	10	8	11
	2			3		1	2	3		4	4	22	9
	14	48	24	62	49	8	99	156	10	212	171	741	168
	5	7	3	11	4	1	15	26	1	34	17	110	23
		1	4	4	1	1	2	12		11	10	105	13
	27	35	14	46	16	4	35	96	5	60	97	709	59
1	17	20	6	30	4	4	16	61	2	26	54	240	36
	5	2	3	6	2		6	11		8	13	45	16
	29	84	15	74	16	1	52	87	2	182	134	465	148
	65	112	45	95	30	11	63	240	32	186	289	1,166	181
	30	81	21	43	27	6	58	131	8	88	117	729	108
	7	13	7	15	7	2	8	25	2	17	29	157	18
	6			89	3		24	30	5	66	10	71	23
	3	5	4	12	4		6	15	1	15	14	48	15
	14	24	9	34	15	7	28	71	8	43	69	409	62
	31	50	12	30	18	2	44	93	4	66	94	724	143
	3	2		9	2		7	18		14	9	61	13
	14	7	5	39	6	3	24	63	5	45	45	206	45
	5	10	2	7	3	2	5	37	2	14	27	198	28
2	34	28	16	57	28	24	44	137	6	106	124	524	127
1	19	16	10	19	15	4	20	59	5	45	61	242	43
9	325	531	204	584	239	61	556	1,204	92	1,159	1,438	7,163	1,183
	1		1	4		1	7	7	1	8	6	16	9
				1			2	4			1	4	1
							2			1			
							6				1	3	2
			1					1			1	8	
	1		1	11			6	1		4	10	19	3
	6			1	1	1	2	5		1	10	132	7
	1	1	3	10	8		2	7	2	9	19	15	3
	1	5			1		3	5		1	3	16	3
	21	53	19	54	45	1	100	137	8	206	174	778	150
1	7	4	4	10	5		15	23	2	26	24	125	22
	1	2		5			5	10	1	6	13	72	6
	15	31	18	49	11	1	22	85	2	64	98	609	57
	7	26	8	25	8	9	20	34	6	36	49	259	33
	1	3	1	10	1		4	7	1	5	16	28	8
	27	64	12	46	15	3	34	69	8	136	107	380	118
1	76	120	53	91	55	12	91	212	12	206	327	1,526	175
1	21	87	15	46	17	1	31	118	6	82	84	684	131
1	6	6	11	15	4		6	23	3	14	20	123	14
	8	2	1	15	5	1	20	30	4	43	17	76	15
	1	9	1	14	3		8	18	1	9	14	44	24
1	16	15	8	32	17	8	26	70	7	39	54	407	58
	35	46	10	34	7	2	32	88	5	64	84	596	111
	4	1	1	8	5		4	10		9	12	50	9
	14	6	2	25	6	2	27	66	4	35	54	202	36
	7	9	5	7	3	1	10	32	4	15	43	235	25
3	31	35	22	53	22	14	54	85	8	106	132	537	115
1	17	6	13	17	5	4	17	60	7	34	65	230	48

TABLE 34.—Deaths from Certain Principal Causes, for Counties.

Cause of death	San Luis Obispo.	San Mateo.	Santa Barbara.	Santa Clara.	Santa Cruz.
1917					
All causes	234	366	449	1,612	352
Typhoid fever		2	4	4	1
Malarial fever					
Smallpox				4	
Measles		2	5	4	
Scarlet fever			1	1	
Whooping cough			1	7	3
Diphtheria and croup	2	1	3	3	
Influenza	2		4	12	1
Other epidemic diseases		1	2	1	1
Tuberculosis of lungs	21	49	36	148	13
Tuberculosis of other organs	4	3	6	19	3
Syphilis and gonorrhea		2		7	5
Cancer	10	27	22	114	21
Other general diseases	5	19	21	80	15
Meningitis		2	4	6	1
Other diseases of nervous system	22	28	35	241	41
Diseases of circulatory system	67	61	68	345	89
Pneumonia and broncho-pneumonia	7	30	39	114	46
Other diseases of respiratory system	4	6	19	31	8
Diarrhea and enteritis, under 2 years	5	7	15	42	6
Diarrhea and enteritis, 2 years and over	4	2	14	14	3
Other diseases of digestive system	19	16	23	62	16
Bright's disease and nephritis	9	24	26	105	27
Childbirth	4	1	4	14	1
Diseases of early infancy	16	8	18	53	16
Suicide	3	14	5	30	10
Other violence	20	47	52	89	12
All other causes	10	13	17	62	13
1916					
All causes	230	357	427	1,506	395
Typhoid fever	4	2	6	6	1
Malarial fever	1				
Smallpox					
Measles					
Scarlet fever	1	2			1
Whooping cough		2	6	4	
Diphtheria and croup	1	2	2	8	1
Influenza	2	1	5	13	2
Other epidemic diseases		1	5	7	
Tuberculosis of lungs	21	31	28	100	29
Tuberculosis of other organs	3	7	6	14	7
Syphilis and gonorrhea	1	1		3	
Cancer	13	21	20	134	29
Other general diseases	6	11	18	57	14
Meningitis	2	5	6	6	1
Other diseases of nervous system	18	16	44	205	33
Diseases of circulatory system	61	74	98	322	111
Pneumonia and broncho-pneumonia	10	28	30	113	42
Other diseases of respiratory system	5	5	10	33	9
Diarrhea and enteritis, under 2 years	4	7	4	34	4
Diarrhea and enteritis, 2 years and over	4	8	5	16	3
Other diseases of digestive system	11	15	23	62	14
Bright's disease and nephritis	3	21	24	106	21
Childbirth	2	5	8	11	7
Diseases of early infancy	16	8	18	53	16
Suicide	4	9	11	35	11
Other violence	30	47	40	85	23
All other causes	7	13	12	73	20

Arranged Alphabetically: 1917 and 1916—Concluded.

Yuba	Yolo	Ventura	Tuolumne	Tulare	Tulare	Tulare	Tulare	Tulare	Tulare	Tulare	Tulare	Tulare	Tulare
157	199	345	121	538	31	165	96	420	736	375	258	35	249
1		2	8	2		3	2	9	3	1			
			1	4		1	1		1		1		
		2											

TABLE 35.—Proportion per 1,000 Total Deaths from Certain Principal Causes, for

Cause of death	The State.	Alameda	Butte.	Contra Costa.
1917				
All causes	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	5.3	2.9	9.6	4.1
Malarial fever	1.1	0.5	14.5	
Smallpox	0.3	0.5		
Measles	4.5	4.0	14.5	2.2
Scarlet fever	1.2	1.3		
Whooping cough	4.8	2.6		6.6
Diphtheria and croup	4.9	4.8		8.8
Influenza	6.6	4.8	28.9	4.4
Other epidemic diseases	3.4	3.4	7.2	6.6
Tuberculosis of lungs	113.8	94.9	88.8	68.3
Tuberculosis of other organs	15.9	14.2	7.2	15.4
Syphilis and gonorrhea	7.2	5.8	2.4	4.4
Cancer	73.3	80.4	101.2	46.3
Other general diseases	36.0	34.8	50.6	44.1
Meningitis	6.7	5.5	2.4	8.8
Other diseases of nervous system	41.1	78.3	50.6	59.5
Diseases of circulatory system	177.8	233.5	173.5	152.0
Pneumonia and broncho-pneumonia	90.3	96.6	94.0	129.0
Other diseases of respiratory system	19.0	15.0	12.0	30.8
Diarrhea and enteritis, under 2 years	21.6	16.9	28.9	28.6
Diarrhea and enteritis, 2 years and over	9.1	8.7	2.4	4.4
Other diseases of digestive system	53.4	60.1	67.5	44.1
Bright's disease and nephritis	75.8	70.4	86.8	61.9
Childbirth	9.2	9.5	12.0	4.4
Diseases of early infancy	37.4	41.7	36.2	57.3
Suicide	21.3	20.8	21.7	11.0
Other violence	81.5	56.4	60.2	163.0
All other causes	37.4	28.7	28.9	30.8
1916				
All causes	1,000.0	1,000.0	1,000.0	1,000.0
Typhoid fever	5.2	6.2	11.5	9.2
Malarial fever	1.4	0.3	5.8	
Smallpox	0.3	0.3		4.6
Measles	1.0	0.6		
Scarlet fever	0.9			
Whooping cough	4.9	2.2		6.9
Diphtheria and croup	7.3	9.2	2.9	11.7
Influenza	7.2	5.3	25.9	6.6
Other epidemic diseases	3.4	2.8	11.5	2.3
Tuberculosis of lungs	115.6	97.2	86.5	55.0
Tuberculosis of other organs	16.5	19.3	14.4	20.6
Syphilis and gonorrhea	6.9	7.6	5.8	6.9
Cancer	72.2	80.7	72.1	61.9
Other general diseases	35.7	33.3	25.9	35.6
Meningitis	5.9	6.1	2.9	9.2
Other diseases of nervous system	67.5	61.2	72.1	45.9
Diseases of circulatory system	201.7	250.4	221.9	197.2
Pneumonia and broncho-pneumonia	86.1	100.3	118.1	114.7
Other diseases of respiratory system	17.6	19.9	14.4	11.5
Diarrhea and enteritis, under 2 years	19.9	12.9	14.4	13.7
Diarrhea and enteritis, 2 years and over	10.9	7.0	14.4	4.6
Other diseases of digestive system	49.1	48.2	57.6	36.7
Bright's disease and nephritis	73.3	62.2	51.9	45.9
Childbirth	8.7	7.3	14.4	11.5
Diseases of early infancy	37.8	38.1	31.7	45.9
Suicide	23.0	23.5	8.6	18.3
Other violence	82.2	54.9	72.1	194.9
All other causes	37.8	35.0	43.2	25.2

Selected Counties (Reporting 300 Deaths), Arranged Alphabetically: 1917 and 1916.

Fresno	Humboldt	Imperial	Kern	Los Angeles	Martin	Mendocino	Monterey	Napa	Orange	Riverside
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
12.7	2.6	21.1	11.0	4.2		3.1	3.0		4.6	10.3
3.7	2.6		9.1	0.3				1.8		
5.2		10.5	3.7	3.5	15.6					3.4
2.2	2.5			1.0	15.6		3.0			1.7
16.4	17.9	10.5	3.7	2.8		3.1	5.9		10.7	18.9
7.4	5.1		5.5	4.7	3.1	12.3	3.0		1.5	3.4
10.4	5.1	7.9	7.3	5.8	3.1	6.2	5.9		9.2	6.9
3.2	2.5	2.6	3.7	3.2			5.9		4.6	3.4
113.8	66.3	126.3	120.4	141.5	171.3	129.2	41.6	87.9	95.1	170.1
18.6	28.1	21.1	21.9	15.9	9.4	12.3	14.8	12.8	16.9	25.8
6.7	2.5	15.8	3.7	6.4	6.2	9.2		1.8	6.1	3.4
52.8	45.0	21.0	45.6	80.4	93.5	46.1	80.1	64.1	70.6	60.2
37.9	25.5	15.8	31.0	37.0	34.3	36.9	50.4	36.6	46.0	27.5
7.4	10.2	5.3	20.1	5.8	3.1	6.2	14.8	3.7	9.2	10.3
54.3	61.2	42.1	69.3	74.7	77.9	110.8	86.1	153.8	113.5	89.4
133.9	232.1	47.4	87.6	188.9	168.2	169.2	192.9	205.1	145.7	108.2
110.9	58.7	94.7	80.3	72.5	90.4	132.3	89.0	148.4	69.0	99.7
8.9	17.0	21.0	21.9	18.9	18.7	15.4	20.8	23.8	23.0	13.8
45.4	12.8	63.2	32.8	19.8	6.2	12.3	17.8		50.8	41.2
11.3	2.5	10.5	7.3	8.0	3.1	6.2	8.9	9.2	18.4	10.3
56.6	63.3	26.3	74.8	55.9	28.0	43.1	41.6	44.0	52.2	48.1
55.8	74.0	50.0	51.1	80.6	62.3	80.0	92.0	91.6	46.0	75.6
14.9	12.8	13.2	18.2	8.8	9.4	6.1	8.9	3.7	13.8	12.0
67.0	56.1	79.0	45.6	33.1	28.0	21.5	41.5	12.8	50.8	41.2
14.1	23.0	31.6	25.5	21.9	28.0	33.8	14.8	18.3	10.7	8.6
93.0	119.9	244.7	169.7	62.4	87.2	86.2	100.9	51.3	87.4	75.6
33.5	45.9	18.4	29.2	42.0	37.4	18.5	56.4	20.3	20.2	34.4
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
10.7		25.1	16.0	3.2		2.8	3.1		6.8	12.6
4.5		9.4	5.3	0.1					1.7	3.6
0.9			1.8	0.3						3.6
0.9		15.7	10.6	1.0		8.4				10.8
3.6	2.4		1.8	0.5					1.7	
4.5		6.3	5.3	8.7			3.1		18.8	10.8
9.0		6.3	5.3	2.8			18.5		1.7	3.6
18.8	7.1	3.1		5.9	3.8	5.6	3.1	1.9	17.1	3.6
7.2			5.3	3.1	3.8	2.8	3.1	9.4		5.4
122.7	94.8	144.2	90.3	141.8	143.9	114.2	64.6	99.8	92.5	179.8
16.1	35.5	18.8	31.9	13.9	18.9	13.9	21.5	7.5	17.1	27.0
10.7	7.1	9.4	8.9	6.0	11.4	2.8	3.1	3.8	8.6	9.0
55.5	56.9	18.8	40.8	82.7	60.6	36.2	46.1	58.4	83.9	39.0
27.8	47.4	40.8	33.7	38.1	37.0	30.6	21.5	40.0	42.8	30.0
9.0	2.4	3.1	5.3	6.0	7.6	5.6	3.1	5.7	17.1	7.2
55.5	56.9	34.5	33.7	60.5	53.0	139.3	83.1	120.5	78.8	61.1
134.4	210.9	53.3	129.4	206.3	223.5	156.0	232.8	226.0	155.8	163.6
96.8	68.7	100.3	74.5	70.8	79.5	94.7	61.6	163.8	78.8	55.7
15.2	19.0	9.4	17.7	15.2	11.4	11.2	18.5	11.3	25.7	10.8
54.7	9.5	87.8	28.4	21.8	11.4	11.1	24.6	3.8	25.7	36.0
9.9	7.1	12.5	17.7	13.4	3.8	22.3	3.1	16.9	24.0	14.4
50.2	52.1	50.2	53.2	47.7	37.9	52.9	49.2	28.3	54.8	46.8
67.2	63.4	31.3	55.0	88.8	45.5	75.2	107.7	86.6	58.2	57.5
6.3	7.1	9.4	8.9	9.2	15.1	2.8	12.3	1.9	13.7	7.2
60.9	40.3	65.8	56.7	33.3	49.2	36.2	43.1	11.3	42.8	48.6
16.1	11.8	25.1	23.0	20.6	18.9	33.4	21.5	16.9	12.0	18.0
99.5	144.5	188.1	179.1	58.9	117.4	111.4	96.4	65.9	90.8	97.1
31.4	52.1	31.3	51.4	39.4	45.5	30.6	52.3	11.3	29.1	30.6

TABLE 35.—Proportion per 1,000 Total Deaths from Certain Principal Causes, for Con

Cause of death			
	Sacramento	San Bernardino	San Diego
1917			
All causes	1,000.0	1,000.0	1,000.0
Typhoid fever	7.8	6.3	7.0
Malarial fever	1.4		
Smallpox			
Measles	4.9	3.9	9.1
Scarlet fever	1.4		2.1
Whooping cough	6.4	7.1	0.7
Diphtheria and croup	5.6	0.8	4.2
Influenza	4.9	7.1	7.0
Other epidemic diseases	2.1	3.1	2.8
Tuberculosis of lungs	110.1	106.4	119.5
Tuberculosis of other organs	18.4	26.7	11.9
Syphilis and gonorrhea	8.5	8.6	7.0
Cancer	67.7	47.1	67.8
Other general diseases	43.0	20.4	37.7
Meningitis	7.8	6.3	9.1
Other diseases of nervous system	61.4	142.9	83.6
Diseases of circulatory system	169.4	146.0	201.9
Pneumonia and broncho-pneumonia	92.5	69.1	81.8
Other diseases of respiratory system	17.6	13.3	20.3
Diarrhea and enteritis, under 2 years	21.2	51.8	7.0
Diarrhea and enteritis, 2 years and over	10.6	11.8	9.8
Other diseases of digestive system	50.1	33.7	48.2
Bright's disease and nephritis	66.6	51.8	67.7
Childbirth	12.7	11.0	6.3
Diseases of early infancy	44.5	35.3	31.4
Suicide	26.1	11.0	18.9
Other violence	96.7	83.2	86.6
All other causes	41.6	35.3	42.6
1916			
All causes	1,000.0	1,000.0	1,000.0
Typhoid fever	5.8	6.9	4.2
Malarial fever	3.3		0.7
Smallpox		0.9	
Measles			0.7
Scarlet fever	0.8		0.7
Whooping cough	0.8	3.5	7.0
Diphtheria and croup	4.2	0.9	7.0
Influenza	5.8	7.8	13.2
Other epidemic diseases	4.2	0.9	2.1
Tuberculosis of lungs	113.8	177.7	121.0
Tuberculosis of other organs	19.1	22.4	16.7
Syphilis and gonorrhea	8.3	5.2	9.0
Cancer	70.6	55.2	68.1
Other general diseases	28.2	31.1	34.1
Meningitis	5.8	4.3	11.1
Other diseases of nervous system	54.8	117.3	74.4
Diseases of circulatory system	176.1	177.7	227.4
Pneumonia and broncho-pneumonia	98.0	70.7	58.4
Other diseases of respiratory system	19.1	12.1	13.9
Diarrhea and enteritis, under 2 years	24.9	37.1	11.6
Diarrhea and enteritis, 2 years and over	15.0	7.8	9.7
Other diseases of digestive system	58.2	33.6	37.6
Bright's disease and nephritis	73.1	55.2	58.4
Childbirth	8.3	7.8	8.3
Diseases of early infancy	54.8	30.2	37.6
Suicide	26.6	12.9	29.9
Other violence	70.6	91.5	91.8
All other causes	49.8	29.3	45.2

Selected Counties (Reporting 300 Deaths), Arranged Alphabetically: 1917 and 1916.

San Francisco.	San Joaquin.	San Mateo.	Santa Barbara.	Santa Clara.	Santa Cruz.	Solano.	Sonoma.	Stanislaus.	Tulare.	Ventura.
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
3.2	9.4	5.5	8.9	2.5	2.8	2.7	4.1	21.4	8.7	5.8
0.1							1.4		7.4	
1.0				2.5						
5.2	1.5	5.5	11.1	2.5		5.4		7.1	9.3	5.8
1.5			2.2	0.6				2.4		
3.9	1.5		2.2	4.8	8.5	5.4	2.7	14.8	20.4	2.9
9.6	8.7	2.7	6.7	1.9				2.4	5.6	
1.1	8.0		8.9	7.5	2.8	8.0	6.8	26.9	14.9	
3.1	6.5	2.7	4.4	0.6	2.8	5.3	1.4	2.4	1.9	11.6
103.6	121.9	134.2	80.2	91.8	37.0	64.0	88.3	109.5	89.2	124.6
15.4	16.7	8.2	18.4	11.8	8.5	13.3	20.4	26.2	14.9	17.4
14.7	9.4	5.5		4.3	14.2	8.0	1.4	2.4		8.7
99.1	42.8	74.0	49.0	70.7	59.7	58.7	78.8	66.7	55.8	43.5
33.5	26.1	52.1	46.8	49.6	42.6	45.3	36.7	23.8	26.0	31.9
6.3	11.6	5.5	8.9	3.7	2.8	10.7	4.1	11.9	7.4	17.4
66.0	107.4	78.7	78.0	149.5	116.5	77.3	103.2	47.6	94.8	56.1
162.9	131.3	167.1	151.4	214.0	252.8	186.7	205.1	181.0	154.3	113.0
101.9	121.9	82.2	86.9	70.7	130.7	141.3	100.5	100.0	83.6	84.0
21.9	13.1	16.4	42.3	19.2	22.7	16.0	20.4	21.4	14.9	20.3
9.9	16.7	19.2	33.4	26.1	17.1	13.3	10.9	19.0	50.2	86.9
6.7	10.9	5.5	31.2	8.7	8.5	5.8	8.1	14.3	22.3	
57.2	45.0	43.8	62.4	38.5	45.5	72.0	62.5	59.5	40.9	34.8
101.2	103.8	65.8	57.9	65.1	76.7	40.0	84.2	28.6	50.2	60.6
8.5	9.4	2.7	8.9	8.7	2.8	10.7	4.1	16.7	16.7	14.5
28.8	32.7	21.9	40.1	32.9	45.5	50.7	29.9	50.0	70.6	43.5
27.7	20.3	38.4	11.1	18.6	28.4	5.3	24.4	23.8	9.3	14.5
73.2	92.2	128.8	115.8	56.2	34.1	109.3	66.6	97.6	76.2	159.4
38.8	31.2	35.6	37.0	38.5	37.0	45.3	34.0	23.8	59.5	34.8
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
2.2	7.6	5.6	14.1	3.8	2.5	3.1	7.3	5.3	6.8	3.5
0.6	0.9					8.1			2.3	3.5
										3.5
0.4	1.7									3.5
1.1		5.6			2.5		1.4	5.3		
2.7	2.6	5.6	14.0	2.6		3.1	1.4		9.1	24.6
18.4	5.9	5.6	4.7	5.1	2.5	9.4		15.9	4.5	3.5
2.1	2.5	2.8	11.7	8.3	5.1		13.1	13.2	24.9	3.5
2.2	2.5	2.8	11.7	4.5			5.8	5.3	6.8	3.5
108.6	126.8	86.9	65.6	102.2	73.4	50.2	84.2	97.9	90.5	96.2
17.4	18.6	19.6	14.0	8.9	17.7	15.7	17.4	15.9	9.0	24.6
10.1	5.1	2.8		1.9		12.5	5.8	10.6	4.5	3.5
85.1	48.2	58.8	46.8	85.6	73.4	50.2	79.8	55.6	58.8	52.6
36.2	27.9	30.8	42.2	36.4	35.5	47.0	26.1	37.0	45.2	24.6
8.9	6.8	14.0	14.0	3.8	2.5	9.4	7.3	7.9	6.8	10.5
51.5	99.8	44.8	103.0	130.9	83.6	59.6	68.2	90.0	61.1	52.6
213.0	147.9	207.3	229.5	205.6	281.0	210.0	227.9	140.2	165.2	105.3
95.5	110.7	78.4	70.3	72.2	106.3	125.4	101.6	89.9	70.1	105.3
17.2	11.8	14.0	23.4	21.1	22.8	31.4	20.3	42.3	11.3	21.1
10.6	12.7	19.6	9.4	21.7	10.1	18.8	8.7	18.5	49.8	70.2
6.1	20.3	22.4	11.7	10.2	7.6	3.1	7.2	2.6	13.6	14.0
56.8	49.0	42.0	53.9	39.6	35.5	40.8	63.9	60.9	33.9	31.6
83.2	98.8	58.8	56.2	67.7	53.2	56.4	81.3	68.8	47.5	70.2
7.0	7.6	14.0	7.0	7.0	17.7	9.4	11.6	13.2	13.6	24.6
28.2	30.4	64.5	49.2	37.7	30.4	53.3	36.3	69.1	90.5	52.6
32.8	21.1	25.2	25.8	22.3	27.9	15.7	18.9	21.2	13.6	17.5
75.0	97.2	131.7	93.7	54.3	58.2	128.5	62.4	79.4	106.3	150.9
32.1	40.6	36.4	28.1	46.6	50.6	43.9	42.1	37.0	54.3	21.0

TABLE 36.—Deaths from Certain Principal Causes, for Cities

Cause of death	Cities of 5,000 in 1910	Northern California			
		Eureka	Napa	Peta- luma	Santa Rosa
1917					
All causes	25,370	201	89	146	134
Typhoid fever	129				1
Malarial fever	16		1		1
Smallpox	7				
Measles	107				
Scarlet fever	31	1			
Whooping cough	97				1
Diphtheria and croup	154				
Influenza	121			2	
Other epidemic diseases	84	1			1
Tuberculosis of lungs	2,819	14	8	9	9
Tuberculosis of other organs	417	6	2	1	4
Syphilis and gonorrhea	237				1
Cancer	2,154	14	6	14	13
Other general diseases	931	6	2	6	5
Meningitis	176	1	1	1	
Other diseases of nervous system	1,916	13	5	14	13
Diseases of circulatory system	4,557	55	20	28	25
Pneumonia and broncho-pneumonia	2,256	16	8	14	11
Other diseases of respiratory system	481	3	2	6	3
Diarrhea and enteritis, under 2 years	414	1		1	3
Diarrhea and enteritis, 2 years and over	212		2		1
Other diseases of digestive system	1,494	14	10	14	11
Bright's disease and nephritis	2,071	22	8	9	9
Childbirth	260	3			2
Diseases of early infancy	905	6	4	6	3
Suicide	563	1	1	5	4
Other violence	1,773	17	6	10	5
All other causes	985	7	3	6	8
1916					
All causes	24,235	233	103	90	151
Typhoid fever	102			2	2
Malarial fever	17				
Smallpox	2				
Measles	21				
Scarlet fever	19	1			
Whooping cough	98				
Diphtheria and croup	204				
Influenza	114			2	1
Other epidemic diseases	74		4	1	1
Tuberculosis of lungs	2,715	2	11	3	8
Tuberculosis of other organs	427	8	1	3	4
Syphilis and gonorrhea	198	2			1
Cancer	2,000	19	6	10	14
Other general diseases	905	9	9	3	7
Meningitis	165	1	3		2
Other diseases of nervous system	1,497	14	5	9	9
Diseases of circulatory system	5,089	54	25	16	31
Pneumonia and broncho-pneumonia	2,024	12	6	10	12
Other diseases of respiratory system	410	4	2	3	4
Diarrhea and enteritis, under 2 years	392	1	2		1
Diarrhea and enteritis, 2 years and over	259	2	4		1
Other diseases of digestive system	1,298	16	4	5	13
Bright's disease and nephritis	1,907	17	6	2	10
Childbirth	204		1	2	3
Diseases of early infancy	872	9	4	7	9
Suicide	611	3			1
Other violence	1,674	27	9	6	12
All other causes	937	12	1	6	5

of 5,000 in 1910, Arranged Geographically: 1917 and 1916.

Marys- ville	Central California									
	San Fran- cisco	Ala- meda	Berke- ley	Oak- land	Rich- mond	San Rafael	San Luis Obispo	San Jose	Santa Cruz	Fresno
121	7,156	291	478	2,197	107	91	103	434	168	548
1	23	3		5				2	1	12
	1			2						1
	7									
	37		1	14				2		5
	11	3	1	1				1		1
1	28	2	2	5				2		13
	69	2	6	4		1	1	3		4
	8	3	2	12			1	4		8
	22		1	9						2
12	741	21	27	177	9	7	8	35	4	56
2	110	5	10	30	4	2	1	5	3	14
2	105			19				3	2	2
4	709	23	45	177	6	15	3	42	13	36
6	240	12	16	82	4	5	2	19	6	24
	45	2		15	1			1	1	6
12	465	30	50	163	6	4	10	37	20	31
18	1,161	83	131	502	11	16	36	97	42	61
17	729	16	25	262	18	9	2	37	22	53
2	157	4	5	39	3	3	1	8	5	5
3	71	3		30	1			11	2	28
2	48	1	2	22		1	1	1	2	6
6	400	17	35	140	4	4	8	20	11	34
17	724	19	37	160	10	4	3	30	9	29
	61	3	5	24	2	3	3	5	1	8
	206	5	24	107	9	5	6	18	5	39
3	198	5	5	56	1	1	2	12	3	8
11	524	18	29	125	16	6	8	22	7	43
2	242	11	9	75	2	5	5	17	9	19
116	7,163	261	458	2,095	134	81	101	532	178	396
1	16		3	9			3	2		5
2	4			1			1			1
	3									1
	8						1		1	1
	19		2	4	1			1		5
	132	1	3	24				4		2
1	15	1	4	12	1			7		5
1	16		3	5		1		1		3
15	778	15	23	184	8	9	8	41	7	37
1	125	6	4	50	4			6	4	9
	72	2	2	21	1		1			2
3	609	20	53	175	10	6	5	57	15	28
2	259	10	14	78	8	4	4	19	5	10
	28	4	4	11	1	1		3		6
8	369	20	34	136	5	6	7	44	20	24
13	1,528	70	134	553	16	15	36	105	67	50
20	684	20	30	165	20	10	6	52	14	39
2	123	3	10	47	1		3	8	3	3
	76	2	5	20	1	2	1	17		18
8	44		5	16	1		2	7		4
5	407	17	19	103	5	2	6	21	5	52
15	596	22	35	141	7	6	2	38	8	26
2	50	3	5	15	2	2		3	3	2
2	202	8	16	95	11	4	6	27	4	25
1	235	9	11	47	1			16	5	6
17	537	20	22	103	25	7	5	22	8	40
2	230	8	17	79	5	6	4	31	9	14

Table 36.—Deaths from Certain Principal Causes, for Cities of

Cause of death	Central California				
	Hazards- field	Sacra- mento	Stock- ton	Vallejo	Los Angeles
1917					
All causes	347	1,220	901	181	6,777
Typhoid fever	5	11	10		30
Malarial fever	5	2			3
Smallpox					
Measles		6	2	2	29
Scarlet fever		2			8
Whooping cough	1	9	2		19
Diphtheria and croup	2	8	5		39
Influenza	3	7	5	3	30
Other epidemic diseases	1	3	6		29
Tuberculosis of lungs	50	141	95	12	946
Tuberculosis of other organs	10	26	17	2	114
Syphilis and gonorrhoea	2	10	13		55
Cancer	16	92	38	13	549
Other general diseases	12	57	27	5	248
Meningitis	11	11	10	4	45
Other diseases of nervous system	17	72	118	16	461
Diseases of circulatory system	30	201	125	33	1,144
Pneumonia and broncho-pneumonia	24	114	120	32	469
Other diseases of respiratory system	6	18	13	3	122
Diarrhea and enteritis, under 2 years	9	25	16		130
Diarrhea and enteritis, 2 years and over	4	11	10	1	56
Other diseases of digestive system	27	65	45	17	410
Bright's disease and nephritis	18	84	69	8	536
Childbirth	7	18	11	2	70
Diseases of early infancy	15	50	24	12	230
Suicide	6	23	18		106
Other violence	53	102	74	13	444
All other causes	9	52	28	3	305
1916					
All causes	362	1,026	741	135	6,224
Typhoid fever	8	5	6		14
Malarial fever		4			
Smallpox					2
Measles	5		1		8
Scarlet fever	1	1			4
Whooping cough	2		3		41
Diphtheria and croup	2	4	1		20
Influenza		4			27
Other epidemic diseases	2	5	1		23
Tuberculosis of lungs	38	122	76	5	875
Tuberculosis of other organs	12	21	16	2	94
Syphilis and gonorrhoea	5	9	6	4	45
Cancer	15	81	38	6	532
Other general diseases	11	31	22	6	254
Meningitis	3	7	7		45
Other diseases of nervous system	11	57	102	6	355
Diseases of circulatory system	50	176	117	27	1,303
Pneumonia and broncho-pneumonia	25	103	86	27	463
Other diseases of respiratory system	7	18	12	4	83
Diarrhea and enteritis, under 2 years	8	25	13	2	136
Diarrhea and enteritis, 2 years and over	4	16	17		86
Other diseases of digestive system	25	64	39	5	323
Bright's disease and nephritis	23	82	52	10	525
Childbirth	1	9	5	2	63
Diseases of early infancy	19	53	21	7	217
Suicide	11	24	13	2	145
Other violence	52	53	55	13	385
All other causes	22	50	32	7	233

5,000 in 1910, Arranged Geographically: 1917 and 1916—Concluded.

Alhambra	Long Beach	Pasadena	Pomona	Southern California				San Bernardino	San Diego	Santa Barbara
				Santa Monica	Santa Ana	Riverside	Redlands			
64	514	498	148	187	184	289	150	373	1,048	286
	2	6		1		3		4	8	1
			1					1	2	5
1			3		1	4	1	1	1	
	2							1	4	3
	3	3	6		4	1	4	2	7	3
7	31	52	12	12	13	35	30	85	131	30
1	6	6	1	2	4	7	3	6	10	3
	1	4	1	1	1	2	2	4	8	
4	66	52	12	17	11	25	19	27	77	16
5	28	22	4	8	12	9	8	5	40	11
	1	3	1	3	3	3		1	6	3
9	56	47	12	20	26	35	4	22	105	23
15	120	110	35	43	32	34	29	45	222	48
1	29	34	11	16	13	28	6	29	76	31
2	7	9	4	3	10	2	4	2	20	10
	8	6	3	2	6	8	8	22	7	8
	3	3	1	2	3	5		5	13	6
2	29	31	9	8	8	15	2	17	52	20
2	41	47	12	9	5	28	13	15	77	17
1	2	2	2	4	2	1	1	8	6	3
4	20	14	2	10	11	9	6	12	34	9
1	8	7	1	1	1	2		5	22	
3	29	21	11	15	10	21	9	34	64	23
6	22	19	5	11	8	11	5	18	53	10
87	463	510	154	193	165	291	137	325	1,056	272
	3	2	3		1	2	1	3	6	5
		1			1	1			1	
						2			1	
8	3	2	1	1	4	2			3	1
1		2				1			8	
1		5	3	1	6	2	4	2	9	1
13	30	52	7	13	3	51	26	81	134	20
2	5	7	2	1	3	5	6	6	17	3
	1	3		2	3	4		2	10	
14	47	58	14	22	12	10	9	28	71	13
8	29	21	4	3	10	14	4	14	35	13
	3	3	1	2	1	1		2	11	5
10	36	42	4	16	19	21	4	5	76	23
10	128	105	32	34	36	57	32	40	253	90
6	25	27	14	13	10	9	7	22	63	18
2	14	15	3	2	1	6	2	4	16	5
3	2	9	3	5	2	8	1	14	12	3
	7	5	5	2	8	4	2	3	9	2
4	27	25	11	10	9	19	5	15	41	16
6	49	55	9	16	11	22	10	24	63	19
2	3	3	1	3	1	1	4		10	3
3	11	16	12	3	8	12	5	10	37	9
	4	10	1	5	1	5	2	6	39	8
4	24	20	16	27	9	22	11	28	77	18
	14	22	8	12	6	9	2	16	51	4

Table 36.—Deaths from Certain Principal Causes, for Cities of

Cause of death	Central California				
	Haywards	Sacramento	Stockton	Vallejo	Los Angeles
1917					
All causes	347	1,220	901	181	6,717
Typhoid fever	5	11	10		36
Malarial fever	5	2			3
Smallpox					
Measles		6	2	2	59
Scarlet fever		2			8
Whooping cough	1	9	2		19
Diphtheria and croup	2	8	5		39
Influenza	3	7	5	3	30
Other epidemic diseases	1	3	6		59
Tuberculosis of lungs	50	141	95	12	946
Tuberculosis of other organs	10	26	17	2	114
Syphilis and gonorrhoea	2	10	13		55
Cancer	16	92	38	13	549
Other general diseases	12	57	27	5	248
Meningitis	11	11	10	4	45
Other diseases of nervous system	17	72	118	16	461
Diseases of circulatory system	30	201	125	33	1,144
Pneumonia and broncho-pneumonia	28	114	120	32	469
Other diseases of respiratory system	6	18	13	3	122
Diarrhea and enteritis, under 2 years	9	25	16		130
Diarrhea and enteritis, 2 years and over	4	11	10	1	56
Other diseases of digestive system	27	65	45	17	410
Bright's disease and nephritis	18	84	69	8	536
Childbirth	7	18	11	2	70
Diseases of early infancy	15	50	24	12	230
Suicide	6	23	18		166
Other violence	53	102	74	13	444
All other causes	9	52	28	3	305
1916					
All causes	362	1,026	741	135	6,224
Typhoid fever	8	5	6		14
Malarial fever					
Smallpox		4			2
Measles	5		1		8
Scarlet fever	1	1			4
Whooping cough	2		3		41
Diphtheria and croup	2	4	1		20
Influenza		4			27
Other epidemic diseases	2	5	1		23
Tuberculosis of lungs	38	122	76	5	875
Tuberculosis of other organs	12	21	16	2	94
Syphilis and gonorrhoea	5	9	6	4	45
Cancer	15	81	38	6	532
Other general diseases	11	31	22	6	254
Meningitis	3	7	7		45
Other diseases of nervous system	11	57	102	6	355
Diseases of circulatory system	50	176	117	27	1,203
Pneumonia and broncho-pneumonia	25	105	86	27	463
Other diseases of respiratory system	7	18	12	4	83
Diarrhea and enteritis, under 2 years	8	25	13	2	136
Diarrhea and enteritis, 2 years and over	4	16	17		86
Other diseases of digestive system	25	61	39	5	323
Bright's disease and nephritis	23	82	52	10	525
Childbirth	1	9	5	2	63
Diseases of early infancy	19	53	21	7	217
Suicide	11	24	13	2	145
Other violence	52	53	35	13	365
All other causes	22	50	32	7	253

5,000 in 1910, Arranged Geographically: 1917 and 1916—Concluded.

Southern California										
Alhambra	Long Beach	Pasadena	Pomona	Santa Monica	Santa Ana	Riverside	Redlands	San Bernardino	San Diego	Santa Barbara
64	514	498	148	187	184	280	150	373	1,048	286
	2	6		1		3		4	8	1
			1					1	2	5
									2	
1			3		1	4	1	1	1	
	2							1	4	3
	3	3	6		4	1	4	2	7	3
			1	1		1	1	2	1	2
7	31	52	12	12	13	35	30	85	131	30
1	6	6	1	2	4	7	3	6	10	3
	1	4		1	1	2	2	4		
4	66	52	12	17	11	25	19	27	77	16
5	28	22	4	8	12	9	8	5	40	11
	1	3		1	3	3		1	6	3
9	56	47	12	20	26	35	4	22	105	23
15	120	110	35	43	32	34	29	45	222	48
1	29	34	11	16	13	28	6	29	76	31
2	7	9	4	3	10	2	4	2	20	10
	8	6	3	2	6	8	8	22	7	8
	3	8	1	2	3	5		5	13	6
2	29	31	9	8	8	15	2	17	52	20
2	41	47	12	9	5	28	13	15	77	17
1	2	2	2	4	2	1	1	8	6	3
4	20	14	2	10	11	9	6	12	34	9
1	8	7	1	1	1			5	22	
3	29	21	11	15	10	21	9	34	64	23
6	22	19	5	11	8	11	5	18	53	10
87	463	510	154	193	165	291	137	325	1,056	272
	3	2	3		1	2	1	3	6	5
		1			1	1			1	
						2			1	
3	3	2	1	1	4	2			3	1
		2				1			8	
1		5	3	1	6	2	4	2	9	1
1						1			2	3
13	30	52	7	13	3	51	26	81	134	20
2	5	7	2	1	3	5	6	6	17	3
	1	3		2	3	4		2	10	
14	47	58	14	22	12	10	9	28	71	13
3	29	21	4	3	10	14	4	14	35	13
	3	3	1	2	1	1		2	11	5
10	36	42	4	16	19	21	4	5	76	23
10	125	105	32	34	36	57	32	40	253	80
6	25	27	14	13	10	9	7	22	63	18
2	14	15	3	2	1	6	2	4	16	5
3	2	9	3	5	2	8	1	14	12	3
	7	5	5	2	8	4	2	3	9	2
4	27	25	11	10	9	19	5	15	41	16
6	49	55	9	16	11	22	10	24	63	19
2	3	8	1	3	1	1	4		10	3
3	11	16	12	3	8	12	5	10	37	9
	4	10	1	5	1	5	2	6	39	8
4	24	20	16	27	9	22	11	28	77	18
	14	22	8	12	6	9	2	16	51	4

TABLE 37—Proportion per 1,000 Total Deaths from Certain Principal Causes, for 1917 and 1916

Cause of death	Thirty-one cities of 5,000 in 1910	Northern California					Central
		Eureka	San Francisco	Alameda	Berkeley	Oakland	
1917							
All causes	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	
Typhoid fever	5.1		3.2	10.3			2.1
Malarial fever	0.6		0.1				0.9
Smallpox	0.3		1.0				
Measles	4.2		5.2		2.1		6.4
Scarlet fever	1.2	5.0	1.5	10.3	2.1		6.5
Whooping cough	3.8		3.9	6.9	4.2		2.2
Diphtheria and croup	6.1		9.6	6.9	12.5		1.8
Influenza	4.8		1.1	10.3	4.2		5.5
Other epidemic diseases	3.3	5.0	3.1		2.1		4.1
Tuberculosis of lungs	111.1	69.7	103.6	72.2	56.5		90.6
Tuberculosis of other organs	16.4	26.8	15.4	17.2	30.9		12.7
Syphilis and gonorrhea	9.4		14.7				8.6
Cancer	84.9	61.7	99.1	79.0	91.1		80.0
Other general diseases	36.7	29.8	33.5	41.2	33.5		37.3
Meningitis	6.9	5.0	6.3	6.9			6.5
Other diseases of nervous system	75.5	61.7	65.0	103.1	104.6		74.2
Diseases of circulatory system	179.6	273.6	162.9	285.2	274.0		225.5
Pneumonia and broncho-pneumonia	88.9	79.6	101.9	55.0	73.2		91.7
Other diseases of respiratory system	19.0	14.9	21.9	13.7	10.5		17.7
Diarrhea and enteritis, under 2 years	16.5	5.0	9.9	10.3			13.7
Diarrhea and enteritis, 2 years and over	8.4		6.7	3.4	4.2		10.0
Other diseases of digestive system	58.9	61.7	57.2	58.4	73.2		63.7
Bright's disease and nephritis	41.6	100.4	101.2	65.3	77.4		72.8
Childbirth	10.3	14.9	8.5	10.3	10.5		10.9
Diseases of early infancy	35.7	29.8	28.8	17.2	50.2		48.7
Suicide	22.3	5.0	27.7	17.2	10.5		25.5
Other violence	69.9	84.6	73.2	61.9	60.7		56.9
All other causes	38.8	34.8	33.8	37.8	18.8		34.1
1916							
All causes	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	
Typhoid fever	4.2		2.2		6.6		4.3
Malarial fever	0.7		0.6				0.5
Smallpox	0.1						
Measles	0.9		0.4				
Scarlet fever	0.8	4.3	1.1				
Whooping cough	4.0		2.7		4.4		1.9
Diphtheria and croup	8.4		18.4	3.8	6.6		11.5
Influenza	4.7		2.1	3.8	8.7		5.7
Other epidemic diseases	3.0		2.2		6.6		2.1
Tuberculosis of lungs	112.0	94.4	108.6	57.5	50.2		97.8
Tuberculosis of other organs	17.6	34.3	17.4	23.0	8.7		22.9
Syphilis and gonorrhea	8.2	8.6	10.1	7.7	4.4		10.0
Cancer	82.5	81.5	85.1	76.6	115.7		83.5
Other general diseases	37.3	38.6	36.2	38.3	30.6		37.2
Meningitis	6.8	4.3	3.9	15.3	8.7		5.3
Other diseases of nervous system	61.8	60.1	51.5	76.6	74.3		61.9
Diseases of circulatory system	210.0	231.7	213.0	268.2	272.6		261.0
Pneumonia and broncho-pneumonia	83.5	51.5	85.5	76.6	65.5		79.2
Other diseases of respiratory system	16.9	17.2	17.2	11.5	21.8		22.4
Diarrhea and enteritis, under 2 years	16.2	4.3	10.6	7.7	10.9		9.6
Diarrhea and enteritis, 2 years and over	10.7	8.6	6.1		10.9		7.6
Other diseases of digestive system	53.6	68.7	56.8	65.1	41.5		49.2
Bright's disease and nephritis	78.7	73.0	83.2	84.3	76.4		67.3
Childbirth	8.4		7.0	11.5	10.9		7.2
Diseases of early infancy	33.0	38.6	28.2	30.7	34.9		45.3
Suicide	25.2	12.9	32.8	34.5	24.0		22.4
Other violence	69.1	115.9	75.0	76.6	48.0		49.2
All other causes	38.7	51.5	32.1	30.7	37.1		37.1

Selected Cities of 5,000 in 1910 (Reporting 200 Deaths), Arranged Geographically: 1916.

California					Southern California						
San Jose	Fresno	Bakers-field	Sacra-mento	Stock-ton	Los Angeles	Long Beach	Pasa-dena	River-side	San Ber-nardino	San Diego	Santa Bar-bara
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
4.6	21.9	14.4	9.0	11.1	4.5	3.9	12.1	10.4	10.7	7.6	3.5
1.8	14.4	1.6			0.5						
4.6	9.1		4.9	2.2	4.3				2.7	1.9	17.5
2.3	1.8		1.6		1.2					1.9	
4.6	23.7	2.9	7.4	2.2	2.8			13.8	2.7	1.0	
6.9	7.3	5.8	6.6	5.6	5.8	8.9			2.7	3.8	10.5
9.2	14.6	8.6	5.7	5.5	4.5	5.8	6.0	3.5	5.4	6.7	10.5
	3.7	2.9	2.5	6.7	4.3			3.5	5.4	1.0	7.0
80.6	102.2	144.1	115.6	105.4	140.8	60.3	104.4	121.1	227.9	125.0	105.8
11.5	25.5	28.8	21.3	18.9	17.0	11.7	12.0	24.2	16.1	9.5	10.5
6.9	3.7	5.8	8.2	14.4	8.2	2.0	8.0	6.9	10.7	7.6	
96.8	65.7	46.1	75.4	42.2	81.7	128.4	104.4	86.5	72.4	78.5	56.1
43.8	43.8	34.6	46.7	30.0	36.9	54.5	44.2	31.1	13.4	38.2	38.6
2.3	11.0	31.7	9.0	11.1	6.7	1.0	6.0	10.4	2.7	5.7	10.5
85.3	56.6	49.0	59.0	131.0	68.6	106.9	94.4	121.1	59.0	100.2	80.7
223.5	111.3	86.5	164.7	138.7	170.3	233.5	220.9	117.6	120.6	211.8	168.4
85.3	96.7	80.7	93.4	133.2	74.3	56.4	63.3	96.9	77.7	72.5	106.8
18.4	9.1	17.3	14.8	14.4	18.2	13.6	18.1	6.9	5.4	19.1	35.1
25.3	51.1	25.9	20.5	17.8	19.4	15.6	12.0	27.7	59.0	6.7	28.1
2.3	10.0	11.5	9.0	11.1	8.3	5.8	6.0	17.3	13.4	12.4	21.1
46.1	62.0	77.8	53.3	49.9	61.0	56.4	62.2	51.9	45.6	49.6	70.2
69.1	52.9	51.9	68.9	76.6	79.8	70.8	94.4	96.9	40.2	73.5	50.7
11.5	14.6	20.2	14.8	12.2	10.4	3.9	4.0	3.5	21.4	5.7	10.5
41.5	71.2	43.2	41.0	26.6	34.3	38.9	28.1	31.1	32.2	32.4	31.6
27.7	14.6	17.3	18.9	20.0	24.7	15.6	14.1	6.9	13.4	21.0	
50.7	78.5	152.7	83.6	82.1	66.1	56.4	42.2	72.7	91.1	61.1	80.7
39.2	34.7	25.9	42.6	31.1	45.4	42.8	38.2	38.1	48.2	50.6	35.1
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
3.8	12.6	22.1	4.9	8.1	2.3	6.5	3.9	6.9	9.2	5.7	18.4
	2.5		3.9				2.0	3.4		1.0	
	2.5	13.8		1.4	1.3			6.9		0.9	
	2.5	2.8	1.0		0.6					0.9	
1.9	12.6	5.5		4.1	6.6	6.5	3.9	6.9		2.8	3.7
7.5	5.0	5.5	3.9	1.4	3.2		3.9	3.4		7.6	
13.2	12.6		3.9		4.3		9.8	6.9	6.2	8.5	3.7
1.9	7.5	5.5	4.9	1.4	3.7			3.4		1.9	11.0
77.1	93.0	105.0	118.9	102.6	140.6	64.8	102.0	175.3	249.2	126.9	73.5
11.3	22.6	33.1	20.5	21.6	15.1	10.8	13.7	17.2	18.5	16.1	11.0
	5.0	13.8	8.8	8.1	7.2	2.2	5.9	13.7	6.2	9.5	
107.1	70.4	41.4	78.9	51.3	85.5	101.5	113.7	34.4	96.1	67.2	47.8
35.7	25.1	30.4	30.2	20.7	40.8	62.6	41.2	48.1	43.1	33.1	47.8
5.6	15.1	8.3	6.8	9.4	7.2	6.5	5.9	3.4	6.2	10.4	18.4
82.7	60.3	30.4	55.5	137.6	57.0	77.8	82.4	72.2	15.4	72.0	84.6
197.4	125.6	138.1	171.5	157.9	193.3	272.1	205.9	195.9	123.1	239.6	294.1
97.7	98.0	60.1	102.3	116.0	74.9	54.0	52.9	30.9	67.7	50.7	63.2
15.0	7.5	19.3	17.5	16.2	13.3	30.2	29.4	20.6	12.3	15.2	18.4
32.0	45.2	22.1	24.4	17.5	21.9	4.3	17.7	27.5	43.1	11.4	11.0
13.2	10.1	11.1	15.6	22.9	13.8	15.1	9.8	13.7	9.2	8.5	7.3
30.5	80.4	69.1	62.4	52.6	51.9	58.3	49.0	65.3	46.1	38.8	58.8
71.4	65.3	63.5	79.9	70.2	81.3	106.8	107.8	75.6	73.8	50.7	60.9
5.6	5.0	2.8	8.8	6.8	10.1	6.5	5.9	3.4		9.5	11.0
50.7	62.8	52.5	51.7	28.3	34.0	23.8	31.4	41.3	30.8	35.0	33.1
30.1	15.1	30.4	23.4	17.5	23.3	8.7	19.6	17.2	18.5	30.9	29.4
41.3	100.5	143.6	51.7	74.2	61.9	51.8	39.2	75.6	86.1	72.9	66.2
58.3	35.2	60.8	48.7	43.2	40.7	30.2	48.1	30.9	49.2	48.3	14.7

V. Marriages.

TABLE 38.—Marriages Classified by Number in Order and

County	Total marriages.	Number in order				Green			Bride
		First of both parties	First of groom only	First of bride only	Second or over of both	Single	Widowed	Divorced	
California	36,283	25,079	4,842	2,822	3,540	20,981	2,989	2,413	27,901
Alameda	3,540	2,507	443	202	323	2,056	273	312	2,769
Alpine	4	3			1	3	1		3
Amador	39	33	5		1	36		1	33
Butte	275	213	25	7	30	238	14	23	230
Calaveras	30	26	3	1		29	1		27
Colusa	51	41	2	7	1	43	3	5	48
Contra Costa	257	179	29	27	22	208	12	37	206
Del Norte	51	30	1	5	6	40	4	7	44
El Dorado	37	27	4	3	3	31	6		30
Fresno	1,155	837	185	83	100	972	77	106	920
Glenn	65	54	4	5	2	56	4	3	59
Humboldt	389	241	45	30	33	286	25	28	261
Imperial	307	215	50	21	21	265	22	30	236
Inyo	62	42	9	3	8	51	6	5	45
Kern	494	327	90	28	39	417	34	43	395
Kings	251	194	31	11	15	225	15	11	205
Lake	31	22	5	2	2	27	3	1	24
Lassen	59	50	6	1	2	56	1	2	51
Los Angeles	7,888	5,519	893	650	817	6,412	788	688	6,178
Madera	130	89	16	8	17	106	12	13	97
Madera	612	359	121	64	68	480	46	86	423
Marin	16	7	4	2	3	11	1	4	9
Mariposa	174	124	28	7	15	152	12	10	131
Mendocino	184	134	21	11	18	155	16	13	145
Merced	75	57	8	2	8	65	3	7	59
Modoc	4	1	2		1	3		1	1
Monterey	315	196	53	36	30	249	26	40	232
Napa	263	182	44	15	22	226	15	22	197
Nevada	89	65	13	5	6	78	7	4	70
Orange	1,502	962	214	140	186	1,176	143	183	1,102
Placer	90	60	11	4	15	71	7	12	64
Plumas	31	18	7	2	4	25	3	3	20
Riverside	608	414	62	51	81	476	50	73	465
Sacramento	1,299	822	202	96	179	1,024	123	152	918
San Benito	100	82	11	7	9	98	2	14	89
San Bernardino	957	657	116	86	98	773	37	97	743
San Diego	1,090	1,112	276	122	180	1,888	134	108	1,234
San Francisco	6,740	4,722	967	504	563	5,679	466	602	5,226
San Joaquin	1,030	607	133	91	109	830	77	123	788
San Luis Obispo	258	190	35	13	20	225	16	17	203
San Mateo	505	314	96	44	51	410	41	54	358
Santa Barbara	406	271	56	35	44	327	39	40	306
Santa Clara	1,080	755	146	89	99	901	98	95	844
Santa Cruz	346	235	49	24	38	284	33	29	259
Shasta	157	111	23	12	11	134	11	12	123
Sierra	14	9	5			14			9
Siskiyou	215	139	39	16	21	178	13	24	155
Solano	319	190	60	28	32	259	26	35	227
Sonoma	545	389	58	49	58	438	54	53	429
Stanislaus	396	292	36	26	32	328	24	34	318
Sutter	51	41	6	1	3	47	1	3	42
Tehama	121	93	15	6	7	108	7	6	99
Trinity	8	5	2			7		1	6
Tulare	398	289	44	32	33	333	26	39	321
Tuolumne	58	42	11	3	2	53	1	4	45
Ventura	273	196	38	16	24	233	23	18	211
Yolo	156	101	29	10	16	130	9	17	111
Yuba	119	80	10	9	11	99	7	13	98

Marital Condition of Parties, with Per Cents, for Counties: 1917.

Bride		Per cent of marriages				Per cent of grooms			Per cent of brides		
Widowed	Divorced	First of both parties	First of bride only	First of groom only	Second or over of both	Single	Widowed	Divorced	Single	Widowed	Divorced
3,714	4,917	60.1	13.3	7.8	9.8	82.5	8.1	9.4	76.9	10.2	12.9
317	454	70.8	12.7	7.4	9.1	83.5	7.7	8.8	78.2	9.0	12.8
1		75.0			25.0	75.0	25.0		75.0	25.0	
3	3	84.6	12.8		2.6	97.4		2.6	84.6	7.7	7.7
28	27	77.5	9.1	2.5	10.9	86.5	5.1	8.4	80.0	10.2	9.8
3		86.7	10.0	3.3		96.7	3.3		90.0	10.0	
	3	80.4	3.9	13.7	2.0	84.3	5.9	9.8	94.1		5.9
19	32	69.6	11.3	10.5	8.6	80.9	4.7	14.4	80.2	7.4	12.4
3	4	76.5	1.9	9.8	11.8	78.4	7.9	13.7	86.3	5.9	7.8
4	3	78.0	10.8	8.1	8.1	83.8	16.2		81.1	10.8	8.1
123	112	72.5	11.7	7.2	8.6	84.1	6.7	9.2	79.7	10.6	9.7
2	4	83.1	6.1	7.7	3.1	89.2	6.2	4.6	90.8	3.1	6.1
31	47	71.1	13.3	5.9	9.7	84.4	7.4	8.2	77.0	9.1	13.9
41	30	70.0	16.8	6.9	6.8	86.3	7.2	6.5	76.9	13.3	9.8
6	11	67.8	14.5	4.8	12.9	82.2	9.7	8.1	72.6	9.7	17.7
68	66	66.2	18.2	7.7	7.9	84.4	6.9	8.7	73.9	12.7	13.4
14	32	77.3	12.3	4.4	6.0	89.6	6.0	4.4	81.7	5.6	12.7
4	3	71.0	16.1	6.5	6.4	87.1	9.7	3.2	77.4	12.9	9.7
4	4	84.7	10.2	1.7	3.4	94.9	1.7	3.4	86.4	6.8	6.8
851	859	70.0	11.3	8.3	10.4	81.3	10.0	8.7	78.3	10.8	10.9
16	17	68.5	12.3	6.1	13.1	80.8	9.2	10.0	74.6	12.3	13.1
71	118	58.7	19.8	10.4	11.1	78.4	7.5	14.1	69.1	11.6	19.8
2	5	43.8	25.0	12.5	18.7	68.8	6.2	25.0	56.3	12.5	31.2
18	25	71.3	16.1	4.0	8.6	87.4	6.9	5.7	75.3	10.8	14.4
17	22	72.8	11.4	6.0	9.8	84.2	8.7	7.1	78.8	9.2	12.0
8	8	76.0	10.7	2.6	10.7	86.7	4.0	9.3	78.6	10.7	10.7
1	2	25.0	50.0		25.0	75.0		25.0	25.0	25.0	50.0
34	49	62.2	16.8	11.5	9.5	79.0	8.3	12.7	73.6	10.8	15.6
31	35	69.2	16.7	5.7	8.4	85.9	5.7	8.4	74.9	11.8	13.3
8	11	73.0	14.6	5.6	6.8	87.6	7.9	4.5	78.6	9.0	12.4
199	201	64.0	14.3	9.3	12.4	78.3	9.5	12.2	73.4	13.2	13.4
15	11	66.7	12.2	4.4	16.7	78.9	7.8	13.3	71.1	16.7	12.2
6	5	58.1	22.6	6.4	12.9	80.6	9.7	9.7	64.5	19.4	16.1
57	86	68.1	10.2	8.4	13.3	78.3	9.7	12.0	76.5	9.4	14.1
165	216	63.3	15.5	7.4	13.8	78.8	9.5	11.7	70.7	12.7	16.6
9	11	75.2	10.1	6.4	8.3	85.3	1.8	12.9	81.6	8.3	10.1
110	104	68.7	12.1	9.0	10.2	80.8	9.1	10.1	77.6	11.5	10.9
202	254	65.8	16.3	7.2	10.7	82.1	7.9	10.0	73.0	12.0	15.0
605	915	70.0	14.2	7.5	8.3	84.2	6.9	8.9	77.5	9.0	13.5
98	144	67.7	12.9	3.8	10.6	80.6	7.5	11.9	76.5	9.5	14.0
20	35	73.6	13.6	5.0	7.8	87.2	6.2	6.6	78.7	7.7	13.6
51	96	62.2	19.0	8.7	10.1	81.2	8.1	10.7	70.9	10.1	19.0
48	52	66.8	13.8	8.6	10.8	80.5	9.6	9.9	75.4	11.8	12.8
107	138	69.3	13.4	8.2	9.1	82.7	8.6	8.7	77.5	9.8	12.7
37	50	67.9	14.2	6.9	11.0	82.1	9.5	8.4	74.9	10.7	14.4
16	18	70.7	14.7	7.6	7.0	85.4	7.0	7.6	78.3	10.2	11.5
3	2	64.3	35.7			100.0			64.3	21.4	14.3
19	41	64.7	18.1	7.4	9.8	82.8	6.0	11.2	72.1	8.8	19.1
36	56	62.4	18.8	8.8	10.0	81.2	7.8	11.0	71.2	11.3	17.5
45	71	69.7	10.7	9.0	10.6	80.4	9.9	9.7	78.7	8.3	13.0
35	33	75.7	9.3	6.7	8.3	85.0	6.2	8.8	82.4	9.1	8.5
4	5	80.4	11.8	1.9	5.9	92.1	2.0	5.9	82.4	7.8	9.8
11	11	76.9	12.4	4.9	5.8	89.3	5.8	4.9	81.8	9.1	9.1
1	1	62.5	25.0	12.5		87.5		12.5	75.0	12.5	12.5
29	48	72.6	11.1	8.0	8.3	83.7	6.5	9.8	80.6	7.3	12.1
4	9	72.4	10.0	5.2	3.4	91.4	1.7	6.9	77.6	6.9	15.5
34	28	71.4	13.9	5.9	8.8	85.3	8.1	6.6	77.3	12.4	10.3
15	30	64.7	18.6	6.4	10.3	83.3	5.8	10.9	71.2	9.6	19.2
10	11	74.8	8.4	7.6	9.2	83.2	5.9	10.9	82.4	8.4	9.2

TABLE 39.—Marriages Classified by Number in Order and

County	Total mar- riages	Number in order				Groom			Bride
		First of both parties	First of groom only	First of bride only	Second or over of both	Single	Widowed	Divorced	Single
California	30,006	21,398	3,980	2,518	3,091	25,887	2,745	2,864	23,916
Alameda	2,774	1,982	317	239	256	2,279	242	253	2,301
Alpine									
Amador	51	37	4	6	4	41	6	4	43
Butte	191	143	10	12	26	153	19	19	155
Calaveras	33	25	4	1	3	29	2	2	26
Colusa	40	32	4	1	3	36	1	3	33
Contra Costa	226	150	27	21	19	186	17	23	180
Del Norte	30	19	7	2	2	26	1	3	21
El Dorado	37	24	5	3	5	29	3	5	27
Fresno	1,050	798	98	70	98	891	82	96	863
Glenn	60	53	7	3	6	60	6	3	56
Humboldt	329	250	33	23	24	282	25	22	273
Imperial	244	177	36	15	16	213	14	17	192
Inyo	54	34	8	6	6	42	5	7	40
Kern	486	325	75	31	55	400	47	39	356
Kings	183	145	16	9	13	161	12	10	154
Lake	32	25	2	2	3	27	1	4	27
Lassen	57	43	9	4	1	52	1	4	47
Los Angeles	6,910	4,700	801	625	784	5,501	777	632	5,325
Madera	118	72	19	5	22	91	16	11	77
Marin	575	338	107	50	71	445	41	89	397
Mariposa	10	6	2		2	8		2	6
Mendocino	186	133	18	18	16	151	12	22	151
Merced	153	116	13	8	16	129	14	10	124
Modoc	55	36	7	2	10	43	6	6	38
Mono	2	2				2			2
Monterey	205	136	27	16	26	168	20	22	152
Napa	252	170	34	22	26	204	21	27	192
Nevada	85	60	11		5	80	2	3	69
Orange	1,467	915	236	136	190	1,141	154	172	1,051
Placer	104	78	14	6	6	92	6	6	84
Plumas	29	15	6	3	5	21	4	4	18
Riverside	484	306	69	51	58	375	54	55	357
Sacramento	1,145	757	183	89	116	940	85	120	846
San Benito	71	46	11	9	5	57	3	11	55
San Bernardino	821	538	113	78	92	651	88	82	616
San Diego	1,322	832	201	131	158	1,083	144	145	963
San Francisco	5,981	4,284	806	434	458	5,089	437	465	4,718
San Joaquin	806	557	107	51	91	664	46	96	608
San Luis Obispo	211	163	21	12	15	184	20	7	175
San Mateo	326	197	69	28	32	266	18	42	225
Santa Barbara	200	209	29	25	27	228	30	22	234
Santa Clara	378	627	106	77	68	738	83	62	704
Santa Cruz	293	196	41	30	26	237	32	24	226
Shasta	147	86	31	7	23	117	6	24	93
Sierra	9	8		1		8		1	9
Siskiyou	171	110	29	16	16	139	8	24	136
Solano	271	196	35	21	19	231	13	27	217
Sonoma	442	305	54	38	45	359	39	44	343
Stanislaus	297	227	23	22	25	250	24	23	249
Sutter	31	22	2	1	6	24	4	3	23
Tehama	96	64	12	8	12	76	10	10	72
Trinity	6	2	2		2	4	1	1	2
Tulare	369	297	32	15	32	322	23	24	305
Tuolumne	63	42	18	2	6	55	5	8	44
Ventura	183	127	26	12	18	153	14	16	139
Yolo	123	93	14	7	9	107	7	9	100
Yuba	115	82	15	5	13	97	4	14	87

Marital Condition of Parties, with Per Cents, for Counties: 1916.

Bride		Per cent of marriages				Per cent of grooms			Per cent of brides		
Widowed	Divorced	First of both parties	First of groom only	First of bride only	Second or of both	Single	Widowed	Divorced	Single	Widowed	Divorced
3,236	3,844	69.0	12.9	8.1	10.0	81.9	8.9	9.2	77.2	10.4	12.4
234	339	70.7	11.4	8.6	9.3	82.2	8.7	9.1	79.3	8.5	12.2
4	4	72.6	7.8	11.8	7.8	90.4	11.8	7.8	84.3	7.9	7.8
23	13	74.9	5.2	6.8	18.6	80.1	10.0	9.9	81.2	12.0	6.8
4	3	75.8	12.1	3.0	9.1	87.9	6.1	6.0	78.8	12.1	9.1
1	6	80.0	10.0	2.5	7.5	90.0	2.5	7.5	82.5	2.5	15.0
20	26	70.4	11.9	9.3	8.4	82.3	7.5	10.2	79.6	8.9	11.5
3	6	63.3	22.3	6.7	6.7	86.7	3.3	10.0	70.0	10.0	20.0
5	5	64.9	13.5	8.1	13.5	78.4	8.1	13.5	73.0	13.5	13.5
91	105	74.9	9.3	6.6	9.2	84.1	7.8	8.1	81.5	8.6	9.9
8	5	76.8	10.1	4.4	8.7	87.0	8.7	4.3	81.2	11.6	7.2
25	31	76.0	9.7	7.0	7.3	85.7	7.6	6.7	83.0	7.6	9.4
28	24	72.5	14.8	6.1	6.6	87.3	5.7	7.0	78.7	11.5	9.8
8	6	63.0	14.8	11.1	11.1	77.8	9.2	13.0	74.1	14.8	11.1
63	67	66.9	15.4	6.4	11.3	82.3	9.7	8.0	73.2	13.0	13.8
18	11	79.2	8.8	4.9	7.1	88.0	6.5	5.5	84.2	9.8	6.0
1	4	78.1	6.3	6.2	9.4	84.4	3.1	12.5	84.4	3.1	12.5
2	8	75.4	15.8	7.0	1.8	91.2	1.8	7.0	82.5	3.5	14.0
800	785	68.0	11.6	9.0	11.4	79.6	11.2	9.2	77.1	11.6	11.3
19	22	61.0	16.1	4.2	18.7	77.1	13.6	9.3	65.2	16.1	18.7
81	97	58.8	18.6	10.3	12.8	77.4	7.1	15.5	69.0	14.1	16.9
	4	90.0	20.0		20.0	80.0		20.0	90.0		40.0
15	19	71.9	9.7	9.7	8.7	81.6	6.5	11.9	81.6	8.1	10.3
13	16	75.8	8.5	5.2	10.5	84.3	9.2	6.5	81.0	8.5	10.5
6	11	65.5	12.7	3.6	18.2	78.2	10.9	10.9	69.1	10.9	20.0
		100.0				100.0			100.0		
10	34	66.3	13.2	7.8	12.7	79.5	9.8	10.7	74.1	9.3	16.6
28	32	67.5	13.5	8.7	10.8	81.0	8.3	10.7	76.2	11.1	12.7
6	10	81.2	12.9		5.9	94.1	2.4	3.5	81.2	7.0	11.8
190	226	62.4	15.4	9.3	12.9	77.8	10.5	11.7	71.6	13.0	15.4
6	14	75.0	13.4	5.8	5.8	88.4	5.8	5.8	80.8	5.8	13.4
5	6	51.7	20.7	10.4	17.2	72.4	13.8	13.8	62.1	17.2	20.7
63	64	63.2	14.3	10.5	12.0	77.5	11.1	11.4	73.8	13.0	13.2
119	180	66.1	16.0	7.8	10.1	82.1	7.4	10.5	73.9	10.4	15.7
6	10	64.8	15.5	12.7	7.0	80.3	4.2	15.5	77.5	8.4	14.1
116	80	65.5	13.8	9.5	11.2	79.3	10.7	10.0	75.0	14.1	10.9
169	190	62.9	15.2	9.9	12.0	78.1	10.9	11.0	72.8	12.8	14.4
511	752	71.6	13.4	7.3	7.7	85.1	7.1	7.8	78.9	8.5	12.6
76	122	69.1	13.3	6.3	11.3	82.4	5.7	11.9	75.5	9.4	15.1
18	18	77.3	9.9	5.7	7.1	87.2	9.5	3.3	83.0	8.5	8.5
42	59	60.4	21.2	8.6	9.8	81.6	5.5	12.9	69.0	12.9	18.1
31	25	72.1	10.0	8.0	9.3	82.1	10.3	7.6	80.7	10.7	8.6
91	88	71.4	12.1	8.8	7.7	83.5	9.4	7.1	80.2	10.4	9.4
32	35	66.9	14.0	10.2	8.9	80.9	10.9	8.2	77.1	10.9	12.0
27	27	58.5	21.1	4.8	15.6	79.6	4.1	16.3	63.2	18.1	18.4
		88.9		11.1		88.9		11.1	100.0		
14	31	64.3	17.0	9.4	9.8	81.3	4.7	14.0	73.7	8.2	18.1
21	33	72.3	12.9	7.8	7.0	85.2	4.8	10.0	80.1	7.7	12.2
46	53	69.0	12.2	8.6	10.2	81.2	8.8	10.0	77.6	10.4	12.0
25	23	76.4	7.8	7.4	8.4	84.2	8.1	7.7	83.8	8.4	7.8
2	6	71.0	6.4	3.2	19.4	77.4	12.9	9.7	74.2	6.4	19.4
10	14	66.7	12.5	8.3	12.5	79.2	10.4	10.4	75.0	10.4	14.6
1	3	33.4	33.3		33.3	66.7	16.7	16.6	33.3	16.7	50.0
84	30	78.6	8.7	4.0	8.7	87.3	6.2	6.5	82.7	9.2	8.1
8	11	66.7	20.6	3.2	9.5	87.3	7.9	4.8	69.8	12.7	17.5
26	18	69.4	14.2	6.6	9.8	83.6	7.7	8.7	76.0	14.2	9.8
7	16	75.6	11.4	5.7	7.3	87.0	5.7	7.3	81.3	5.7	13.0
15	13	71.3	13.0	4.4	11.3	84.3	3.5	12.2	75.7	13.0	11.3

TABLE 40.—Brides Classified by Race and Nativity, with Per Cent

County	Total	Total brides, 1917				Non-California
		Total	White			
			Born in California	Born in other states	Foreign born	
California	36,223	35,224	13,578	15,682	6,014	1,659
Alameda	3,540	3,437	1,689	1,103	645	143
Alpine	4	4	1	3		
Amador	39	38	31	2	5	1
Butte	275	271	169	87	15	4
Calaveras	30	30	21	7	2	
Colusa	51	50	41	5	4	1
Contra Costa	257	256	122	80	45	1
Del Norte	51	46	22	22	2	5
El Dorado	37	36	27	8	1	1
Fresno	1,156	1,132	306	516	220	23
Glenn	65	65	30	23	3	
Humboldt	339	323	194	68	61	16
Imperial	307	278	47	168	63	29
Inyo	62	60	31	26	3	2
Kern	494	487	170	296	51	7
Kings	251	241	86	101	54	10
Lake	31	30	19	8	3	1
Lassen	59	58	34	24		1
Los Angeles	7,888	7,608	1,477	4,830	1,296	286
Madera	130	130	58	50	22	
Marin	612	606	330	186	93	3
Mariposa	16	15	7	7	1	1
Mendocino	174	172	122	28	22	2
Merced	184	178	71	55	52	6
Modoc	75	73	51	21	2	2
Mono	4	4	3	1		
Monterey	315	314	169	90	35	1
Napa	263	262	152	85	25	1
Nevada	80	80	65	17	7	
Orange	1,502	1,478	323	972	183	24
Placer	90	89	52	27	10	1
Plumas	31	29	16	11	2	2
Riverside	608	501	136	386	69	17
Sacramento	1,209	1,265	649	442	174	34
San Benito	109	109	70	27	12	
San Bernardino	957	936	181	599	165	21
San Diego	1,690	1,662	373	1,065	204	28
San Francisco	6,746	6,415	2,879	1,981	1,555	331
San Joaquin	1,030	1,015	582	369	114	15
San Luis Obispo	258	257	165	65	27	1
San Mateo	505	500	248	164	88	5
Santa Barbara	406	400	148	180	72	6
Santa Clara	1,089	1,076	543	345	188	13
Santa Cruz	346	345	198	100	47	1
Shasta	157	150	85	57	8	7
Sierra	14	14	9	2	3	
Siskiyou	215	202	102	88	12	13
Solano	319	306	162	99	45	13
Sonoma	545	545	349	122	74	
Stanislaus	386	386	166	154	66	
Sutter	51	50	32	15	3	1
Tehama	121	118	56	53	9	3
Trinity	8	8	6	2		
Tulare	396	393	189	199	55	5
Tuolumne	58	58	36	15	7	
Ventura	273	268	96	100	70	5
Yolo	156	151	94	47	10	5
Yuba	119	117	67	40	10	3

Distribution of White Brides by Nativity, for Counties: 1917 and 1916.

Total brides, 1916						Non-Cal. Canadian.	Per cent of white brides					
Total	White				Born in California		Born in California		Born in other states		Foreign born	
	Total	Born in California	Born in other states	Foreign born			1917	1916	1917	1916	1917	1916
30,906	29,705	11,050	13,187	5,518	1,291	38.5	37.2	44.4	44.2	17.1	18.6	
2,774	2,710	1,820	834	556	64	49.1	48.7	32.1	30.8	18.8	20.5	
						25.0		75.0				
51	51	35	8	8		81.6	68.6	5.3	15.7	13.1	15.7	
191	189	103	81	5	2	62.4	54.5	32.1	42.9	5.5	2.6	
33	33	29	1	3		70.0	87.9	28.3	3.0	6.7	9.1	
40	39	23	12	4	1	82.0	59.0	10.0	30.8	8.0	10.2	
226	223	104	76	43	3	47.6	46.6	34.8	34.1	17.6	19.3	
30	25	9	16		5	47.8	36.0	47.8	64.0	4.4		
37	37	25	9	3		75.0	67.6	22.2	24.3	2.8	8.1	
1,050	1,035	333	465	237	24	35.0	32.2	45.6	44.9	19.4	22.9	
69	69	34	30	5		60.0	49.3	35.4	43.5	4.6	7.2	
329	312	173	71	68	17	60.1	55.4	21.0	22.8	18.9	21.8	
244	222	37	140	45	22	16.9	16.7	60.4	63.0	22.7	27.3	
54	50	17	29	4	4	51.7	34.0	43.3	58.0	5.0	8.0	
486	471	172	251	48	15	34.9	36.5	54.6	53.3	10.5	10.2	
183	180	68	58	54	3	35.7	37.8	41.9	32.2	22.4	30.0	
32	30	19	10	1	2	63.3	63.4	26.7	33.3	10.0	3.3	
57	55	38	16	1	2	58.6	60.1	41.4	29.1		1.8	
6,910	6,675	1,213	4,313	1,149	235	19.4	18.2	63.5	64.6	17.1	17.2	
118	114	49	45	20	4	44.6	43.0	38.5	39.5	16.9	17.5	
575	570	291	177	102	5	54.2	51.1	30.5	31.0	15.3	17.9	
10	8	3	5			46.7	37.5	46.7	62.5	6.6		
135	172	108	39	25	13	70.9	62.8	16.3	22.7	12.8	14.5	
153	152	65	48	39	1	39.9	42.8	30.9	31.6	29.2	25.6	
55	55	33	21	1		60.9	60.0	27.4	38.2	2.7	1.8	
2	2	1	1			75.0	50.0	25.0	50.0			
205	202	116	62	24	3	60.2	57.4	28.7	30.7	11.1	11.9	
252	252	137	78	37		58.0	54.4	32.5	30.9	9.5	14.7	
35	34	58	16	10	1	73.0	69.1	19.1	19.0	7.9	11.9	
1,467	1,451	301	970	180	16	21.8	20.7	65.8	66.9	12.4	12.4	
104	99	60	28	11	5	58.4	60.6	30.4	28.3	11.2	11.1	
29	27	15	9	3	2	55.2	55.6	37.9	33.3	6.9	11.1	
484	467	101	301	65	17	23.0	21.6	65.3	64.5	11.7	13.9	
1,145	1,119	502	379	148	26	51.3	52.9	34.9	33.9	13.8	13.2	
71	71	48	12	11		64.2	67.6	24.8	16.9	11.0	15.5	
821	809	162	507	131	21	19.4	20.2	63.0	63.4	17.6	16.4	
1,322	1,291	246	830	215	31	22.4	19.1	65.3	64.3	12.3	16.6	
5,951	5,308	2,363	1,457	1,488	673	44.9	44.5	30.9	27.5	24.2	28.0	
806	795	426	276	93	11	52.4	53.6	36.4	34.7	11.2	11.7	
211	210	133	49	28	1	64.2	63.4	25.3	23.3	10.5	13.3	
326	321	142	105	74	5	49.6	44.2	32.8	32.7	17.6	23.1	
290	289	130	108	51	1	37.0	45.0	45.0	37.4	18.0	17.6	
878	867	438	266	163	11	50.5	50.5	32.0	30.7	17.5	18.8	
228	229	156	95	38	4	57.4	54.0	29.0	32.9	13.6	13.1	
147	145	75	48	22	2	56.7	51.7	33.0	33.1	5.3	15.2	
9	9	8	1			64.3	38.9	14.3		21.4	11.1	
171	156	60	76	20	15	50.5	38.5	43.6	48.7	5.0	12.8	
271	267	166	61	40	4	52.9	62.2	32.4	22.8	14.7	15.0	
442	442	200	133	49		64.0	58.8	22.4	30.1	13.6	11.1	
297	298	104	118	71	4	43.0	35.5	39.9	40.3	17.1	24.2	
31	31	20	11			64.0	64.5	30.0	35.5	6.0		
96	95	52	38	5	1	47.5	54.7	44.9	40.0	7.6	5.3	
6	6	5	1			75.0	83.3	25.0	16.7			
369	367	183	189	45	2	35.4	36.2	50.6	51.5	14.0	12.3	
63	63	37	15	11		62.1	58.7	25.8	23.8	12.1	17.5	
183	176	68	73	40	7	36.6	35.8	37.3	41.5	26.1	22.7	
123	121	74	33	14	2	62.3	61.1	31.1	27.3	6.6	11.6	
115	113	67	37	9	2	57.3	59.3	34.2	32.7	8.5	8.0	

TABLE 41.—Brides Classified by Race, Nativity

County	Single brides										Total	Total
	Total	Total	White			Non-Caucasian				Total		
			Born in California	Born in other states	Foreign born	Negro	Indian	Chinese	Japanese			
California	27,901	27,101	11,287	11,804	4,510	365	77	43	315	3,714	3,566	
Alameda	2,760	2,700	1,400	809	491	50	1	9	9	317	301	
Alpine	3	3	1	2						1	1	
Amador	33	32	27	1	4		1			3	3	
Butte	220	218	144	64	10		1		1	28	26	
Calaveras	27	27	18	7	2					3	3	
Colusa	48	47	30	4	4		1					
Contra Costa	206	205	105	63	37	1				19	19	
Del Norte	44	39	19	18	2		5			3	3	
El Dorado	30	29	25	4			1			4	4	
Fresno	920	903	333	402	168	1	5	1	10	123	119	
Glenn	59	59	36	30	3					2	2	
Humboldt	261	251	170	36	45		10			31	28	
Imperial	236	216	35	136	45	18	1		1	41	36	
Inyo	45	43	26	15	2		2			6	6	
Kern	365	361	133	191	37	4				63	62	
Kings	205	198	70	79	49	4	1	2	2	14	12	
Lake	24	23	16	7			1			4	4	
Lassen	51	50	30	20			1			4	4	
Los Angeles	6,178	5,965	1,280	3,097	998	173	1	4	35	361	313	
Madera	97	97	52	32	13					16	16	
Marin	423	423	258	165	60					71	70	
Mariposa	9	8	6	2			1			2	2	
Mendocino	131	130	102	14	14		1			18	17	
Merced	145	142	63	37	42	3				17	14	
Modoc	59	57	44	12	1		2			8	8	
Mono	1	1	1							1	1	
Monterey	232	231	161	47	23				1	34	34	
Napa	197	196	122	60	14	1				31	31	
Nevada	70	70	57	10	3					8	8	
Orange	1,102	1,087	271	601	125	14	1			199	191	
Placer	64	64	41	17	6					15	14	
Plumas	20	19	13	5	1		1			6	5	
Riverside	465	453	118	277	58	2	10			57	54	
Sacramento	918	893	519	267	107	12			13	165	158	
San Benito	89	89	60	30	9					9	9	
San Bernardino	743	732	160	442	130	7	4			110	105	
San Diego	1,234	1,212	305	761	146	12	9		1	202	190	
San Francisco	5,226	4,938	2,370	1,364	1,214	29	4	22	233	605	580	
San Joaquin	788	779	433	261	85	3	1	4	1	98	96	
San Luis Obispo	203	203	136	45	22					20	19	
San Mateo	358	354	195	103	56	2		2		51	51	
Santa Barbara	306	303	121	121	61	3				48	47	
Santa Clara	844	835	448	258	129	5		1	3	107	104	
Santa Cruz	259	259	163	63	33					37	37	
Shasta	123	118	71	40	7		5			16	16	
Sierra	9	9	7		2					3	3	
Siskiyou	155	146	79	59	8	6	3			19	16	
Solano	227	218	130	64	24	9				36	33	
Sonoma	429	429	297	85	47					45	45	
Stanislaus	318	318	189	124	55					35	35	
Sutter	42	41	27	13	1				1	4	4	
Tehama	99	97	43	47	7		2			11	11	
Trinity	6	6	6							1	1	
Tulare	321	318	119	148	51	2			1	29	27	
Tuolumne	45	45	30	11	4					4	4	
Ventura	211	208	85	71	52	2			1	34	32	
Yolo	111	107	71	30	6	1	1		2	15	15	
Yuba	96	97	57	33	7	1				10	9	

and Marital Condition, for Counties: 1917.

Widowed brides							Divorced brides								
White		Non-Caucasian					Total	White		Non-Caucasian					
Born in California	Born in other states	Foreign born	Negro	Indian	Chinese	Japanese		Total	Born in California	Born in other states	Foreign born	Negro	Indian	Chinese	Japanese
823	1,811	932	115	8	5	20	4,668	4,357	1,468	2,517	572	87	9	1	14
94	120	87	15		1		454	436	195	174	67	17			1
	1														
2		1					3	3	2	1					
9	13	4	2				27	27	16	10	1				
3															
							3	3	2	1					
4	9	6					32	32	13	17	2				
2	1						4	4	1	3					
	3	1					3	3	2	1					
20	55	43	1		1	3	112	111	43	59	9		1		
1	1						4	4	2	2					
12	10	6		3			47	44	12	22	10		3		
3	17	16	5				39	26	9	15	2	4			
2	3	1					11	11	3	8					
19	34	9	1				66	64	18	41	5	2			
4	5	3	2				32	31	12	17	2	1			
	1	3					3	3	3						
2	2						4	4	2	2					
79	526	208	37			1	859	825	118	607	100	23	1	1	4
3	7	6					17	17	3	11	3				
18	32	20	1				118	116	54	49	13	2			
1		1					5	5		5					
9	2	6		1			25	25	11	12	2				
	9	5	3				22	22	8	9	5				
3	5						8	8	4	3	1				
1							2	2	1	1					
13	14	7					49	49	15	20	5				
14	11	6					35	35	16	14	5				
4	2	2					11	11	4	5	2				
24	127	40	8				201	200	28	154	18	1			
7	6	1		1			11	11	4	4	3				
1	3	1		1			5	5	2	3					
6	40	8	3				86	84	12	60	3	2			
53	71	34	3			4	216	214	77	104	33	1			1
4	3	2					11	11	6	4	1				
10	70	25	4	1			104	99	11	78	10	3	2		
29	136	34	2	1			254	251	39	188	24	3			
177	211	192	14		3	8	915	897	332	416	149	11			7
35	44	17	2				144	140	64	64	12	4			
6	9	4				1	35	35	23	11	1				
12	23	16					96	95	41	38	16	1			
11	27	9	1				52	50	16	32	2	2			
34	33	37	3				138	137	61	54	22	1			
15	12	10					50	49	20	25	4				1
6	9	1					18	16	8	3		1	1		
1	1	1					2	2	1	1					
6	7	3	3				41	40	17	22	1		1		
9	14	10	3				56	55	23	21	11	1			
13	15	17					71	71	39	22	10				
12	17	6					33	33	15	13	5				
3		1					5	5	2	2	1				
6	4	1					11	10	7	2	1	1			
	1						1	1		1					
4	20	3				2	48	48	16	31	1				
2	1	1					9	9	4	3	2				
6	14	12	1			1	28	28	7	15	6				
4	7	4					30	29	19	10		1			
5	3	1	1				11	11	5	4	2				

TABLE 42.—Brides Classified by Race, Nativity

County	Single brides										Total
	Total	White				Non-Caucasian				Total	
		Born in California	Born in other states	Born in foreign	Negro	Indian	Chinese	Japanese			
California	23,916	23,864	9,216	9,470	4,178	272	81	41	658	3,236	3,065
Alameda	2,201	2,157	1,121	602	434	32	2	5	5	234	223
Alpine											
Amador	43	43	32	4	7					4	4
Butte	155	154	87	62	5	1			1	23	22
Calaveras	26	26	24		2					4	4
Colusa	33	32	18	11	3	1				1	1
Contra Costa	180	178	89	55	34	1			1	20	19
Del Norte	21	17	7	10			4			3	2
El Dorado	27	27	23	4						5	5
Fresno	863	844	286	370	183	6	11		2	91	87
Glenn	56	56	28	23	5					8	8
Humboldt	273	260	155	49	56		13			25	22
Imperial	192	179	35	107	37	12			1	28	23
Inyo	40	36	13	22	1		4			8	8
Kern	356	344	135	175	34	12				63	60
Kings	154	152	58	43	51			2		18	17
Lake	27	25	16	8	1		2			1	1
Lassen	47	45	33	12			2			2	2
Los Angeles	5,325	5,171	1,030	3,273	868	122	1	1	30	800	749
Madera	77	76	40	24	12	1				19	17
Marin	397	394	232	101	61	3				81	80
Mariposa	6	4	1	3			2				
Mendocino	151	141	90	30	21	1	8	1		15	13
Merced	124	123	54	39	30				1	13	13
Modoc	38	38	25	12	1					6	6
Mono	2	2	1	1							
Monterey	152	150	80	45	16	2				19	18
Napa	192	192	117	47	28					28	28
Nevada	60	68	49	9	10		1			6	6
Orange	1,051	1,041	242	678	126	10				190	181
Placer	84	80	50	23	7		1		3	6	6
Plumas	18	16	10	5	1		2			5	5
Riverside	357	345	86	214	43	5	5	1	1	63	60
Sacramento	846	831	481	244	106	7	1	1	6	119	112
San Benito	55	55	38	8	9					6	6
San Bernardino	616	603	139	367	97	7	6			116	112
San Diego	963	937	210	571	156	18	5	2	1	169	168
San Francisco	4,718	4,660	1,939	1,007	1,143	16	1	24	598	511	490
San Joaquin	608	599	337	193	69	3		1	5	76	75
San Luis Obispo	175	175	124	32	19					18	17
San Mateo	225	224	110	60	54			1		42	40
Santa Barbara	234	234	118	73	43					31	30
Santa Clara	704	697	373	193	123	2			5	91	89
Santa Cruz	226	222	140	54	28			1	3	32	32
Shasta	93	91	55	20	16		2			27	27
Sierra	9	9	8		1						
Siskiyou	126	115	44	52	19	3	7	1		14	13
Solano	217	214	139	44	31	3				21	21
Sonoma	343	343	221	89	33					46	46
Stanislaus	249	248	87	90	62	1				25	23
Sutter	23	23	15	8						2	2
Tehama	72	71	42	26	3	1				10	10
Trinity	2	2	2							1	1
Tulare	305	304	115	157	32				1	34	33
Tuolumne	44	44	29	10	5					8	8
Ventura	139	134	51	54	29	2			3	26	25
Yolo	100	90	67	21	11		1			7	6
Yuba	87	85	53	24	8	1			1	15	15

and Marital Condition, for Counties: 1916.

Widowed brides								Divorced brides							
Born in California.	White		Non-Caucasian				Total	White		Non-Caucasian				Total	Total
	Born in other states.	Born in foreign born.	Negro.	Indian.	Chinese.	Japanese.		Born in California.	Born in other states.	Born in foreign born.	Negro.	Indian.	Chinese.	Japanese.	
662	1,597	836	97	12	4	28	3,844	3,746	1,172	2,070	504	78	6	19	
60	90	73	11				339	330	139	142	49	9			
2	1	1					4	4	1	3					
9	13			1			13	13	7	6					
2	1	1					3	3	3						
1							6	6	4	1	1				
5	8	6	1				26	26	10	13	3				
2				1			6	6		6					
	4	1					5	5	2	1	2				
20	37	30	2			2	105	104	27	58	19	1			
4	4						5	5	2	3					
6	10	6		3			31	30	12	12	6		1		
1	16	6	5				24	20	1	17	2	4			
2	3	3					6	6	2	4					
13	36	11	3				67	67	24	40	3				
6	9	2	1				11	11	4	6	1				
1							4	4	2	2					
	1	1					8	8	5	3					
69	490	190	41	1		9	785	735	114	550	91	27		3	
4	11	2	2				22	21	5	10	6			1	
22	35	23	1				97	96	37	41	18	1			
							4	4	2	2					
7	4	2		2			19	18	11	5	2		1		
2	2	9					16	16	9	7					
2	4						11	11	6	5					
7	6	5				1	34	34	20	11	3				
7	15	6					32	32	13	16	3				
3	3						10	10	6	4					
20	130	36	3	1			226	224	38	162	24	2			
4		2					14	13	6	5	2			1	
2	2	1					6	6	3	2	1				
4	37	19	3				64	62	9	50	3	1	1		
36	55	21	4			3	180	176	75	80	21	3			1
2	3	1					10	10	8	1	1				
14	74	24	3	1			80	85	9	66	10	3			1
14	111	43	1				190	186	22	148	16	3	1		
130	161	100	8		4	9	752	729	285	289	155	12			11
33	32	10					122	121	56	51	14	1			
4	6	7				1	18	18	5	11	2				
8	21	11	2				50	57	24	24	9	2			
5	19	6				1	25	25	7	16	2				
30	27	32	2				83	81	35	43	3	1			1
9	17	6					35	35	7	24	4				
12	12	3					27	27	8	16	3				
6	6			2			31	29	10	18	1		2		
9	9	3					33	32	18	8	6	1			
15	19	12					53	53	24	25	4				
10	9	4	2				23	22	7	10	5	1			
1	1						6	6	4	2					
3	5	2					14	14	7	7					
1							3	3	2	1					
8	15	10				1	30	30	10	17	3				
1	3	4					11	11	7	2	2				
4	11	10	1				18	17	8	8	1	1			
4	2		1				16	16	3	10	3				
7	7	1					13	13	7	6					

TWENTY-SIXTH BIENNIAL REPORT

OF THE

STATE BOARD OF HEALTH

OF

CALIFORNIA

FOR THE

Fiscal Years from July 1, 1918, to June 30, 1920



CALIFORNIA STATE PRINTING OFFICE
1921

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GEORGE DARBY LESLIE, State Registrar and Director of the Bureau of Vital Statistics, died January 9, 1920, after having served the California State Board of Health for nearly fifteen years. Mr. Leslie was a graduate of the University of California and had been employed by the Federal Census Bureau before taking up his duties as Director of the California Bureau of Vital Statistics at the time of the organization of the bureau in 1905. He was an indefatigable worker and the extensive tabulations of vital statistics in California are a monument to his industry and perseverance.

JOSEPH MARTIN COFFMAN, Custodian of Records in the Sacramento office of the State Board of Health, died August 25, 1919. Mr. Coffman came to the board in July, 1913, and in his six years of service made himself invaluable to the board. His experience as justice of the peace and newspaper editor in Butte County provided a training that made him a most important unit of the staff and his passing has left an unfilled gap in the office of the board. He was always loyal, kindly and upright and is greatly missed by his office associates.

EDWARD A. INGHAM, District Health Officer, died January 3, 1919, after but sixteen months in the service of the State Board of Health. Mr. Ingham was one of the youngest and most brilliant members of the staff. His training in public health was taken at the Massachusetts Institute of Technology and shortly after his graduation he was placed in charge of the public health activities of the board in the southern part of the state. During the epidemic he contracted influenza and died. Mr. Ingham was one of the most promising employees and his passing is a distinct loss to the board.

LETTER OF TRANSMITTAL.

OFFICE OF CALIFORNIA STATE BOARD OF HEALTH,
SACRAMENTO, September 15, 1920.

*To His Excellency, WM. D. STEPHENS,
Governor of California.*

DEAR SIR: In accordance with the state law, I herewith transmit to you the twenty-sixth biennial report of the State Board of Health for the seventieth and seventy-first fiscal years.

Respectfully submitted.

WALTER M. DICKIE,
Secretary of State Board of Health.

REPORT OF THE SECRETARY.

INFLUENZA.

During the biennial period just closed several occurrences of unusual importance in public health are to be recorded, one of these was the great pandemic of influenza which reached the United States in the fall of 1918, quickly spreading throughout the country. Mortality records of the State Board of Health give the interesting information that deaths reported as due to influenza had been increasing rapidly for the previous five years. This fact gives rise to the thought that the widespread prevalence of this disease was not wholly a matter of extension from any one point, but that the little understood forces of nature governing the rise and fall in virulence of this disease had their part in the creation of the pandemic. In California the usual course of events followed the reporting of the first outbreak in two widely separated parts of the state. As in all other parts of the country, a feeling of impotence in the face of a rapidly spreading infection on the part of the health officers was responsible for much confusion and lack of proper utilization of what scanty means of control were available and for the invocation of many peculiar and useless measures that were intended to check the epidemic. The State Board of Health endeavored to pursue a policy of aid to local health departments in the furnishing of results of its studies by qualified experts, in the framing of such special regulations as our knowledge of the subject indicated were reasonable and proper, and in an effort to allay the popular alarm and instill confidence in those who had delegated to them the duty of the conservation of the public health in their own communities. It was also the policy of the Board of Health to uphold local health officers in carrying out their own procedures wherever there appeared to be any justification whatever for such procedures.

The outstanding results of our experience with influenza in the way of cause, mode of spread and control may be briefly summarized, as follows:

(1) The microbial cause of influenza, the existence of which is undoubted, has not been discovered.

(2) Vaccines have not been proven of specific value, although it must be said that certain vaccines of the mixed type have given evidence of some protective value against the pneumoniatic complication of the disease.

(3) The consensus of opinion regarding the mode of spread is that the virus exists in the secretions of the mouth and nose and is spread by droplet infection in the same manner as other respiratory diseases.

(4) The measures of control are general, and there is no one thing that has been proven by experience to have much influence upon the spread of an epidemic of influenza. The following general measures are justifiable, and should govern until more scientific control is developed by further experience.

(a) Enforcement of the prompt reporting of cases.

(b) Enforcement of the immediate isolation of cases.

(c) Schools should not be closed unless no adequate public health nursing or medical inspection services are available.

(d) Unnecessary public gatherings should be prohibited, especially in the small and rural communities, and all forms of social gatherings should be restricted to the absolute minimum.

(e) Laws requiring the sterilization of common drinking receptacles should be rigidly enforced.

(f) Enforce laws against expectoration in public places.

(g) The principal burden of responsibility in the control of influenza undoubtedly rests chiefly upon the individual, and health officers should, therefore, utilize to the utmost all means of education of the people in the responsibility of the individual in carrying out measures designed to limit the transfer of infection from one to another. During an epidemic of influenza people should remain at home whenever suffering from colds, even though they have no suspicion that they may have influenza. The isolation of cases is undoubtedly of first importance, and the effectiveness of this measure is after all largely a matter of education of the general public with voluntary observance of the common sense demands of the situation on their part.

The adoption of hospital, medical and nursing facilities and various other sociological activities connected with the management of community measures during an epidemic of influenza are measures of the utmost importance as having a bearing not so much upon the extent of the disease as upon the total death rate, the comfort of the victims, and the subsequent influence upon related health matters, such as the prevalence of tuberculosis.

MALARIA.

One of the outstanding accomplishments of the board of health during this biennial period was the demonstration campaign against malaria at Anderson in Shasta County. Malaria is an important problem in this state, even though it is not widely prevalent, and it is a matter of great public health interest on account of the possibilities for its extension with the increasing development of rice culture. Special investigations have been carried on and are still continuing under the Division of Entomology of the Bureau of Communicable Diseases, and also under the United States Public Health Service, having for their object the investigation of the influence of rice culture and the development of means for the prevention of the extension of malaria. Anderson was selected as a favorable site for the demonstration because of the very intensive infection of the inhabitants of that town with malaria. The reason for the condition was the unscientific and careless irrigation methods prevailing in that district, seepage water being allowed to collect in roadside ditches and to stand in unused fields.

A preliminary malarial index taken in June, 1919, showed among adults a percentage of 64 who gave a definite history of malaria within a period of three months and 20 per cent were found upon examination of blood smears to harbor the malarial parasite in the peripheral blood. In the age group of 10 to 15 years, 35 per cent of blood examinations were positive and 80 per cent gave a positive malarial history. In the age group under ten years, 23 per cent showed positive blood smears and 84 per cent gave a positive malarial history.

The sum of \$10,000 was expended on the work of malaria eradication in this community, and the work was placed under the supervision of Professor Stanley B. Freeborn, Assistant Consulting Entomologist. The problem was attacked from all angles and included the screening of houses, the treatment of infected individuals, and draining and oiling operations for the extermination of mosquitoes. Screen was furnished at cost to the people of the town and carpenters were supplied to do the work. A physician and nurse with laboratory equipment were detailed to give free diagnosis and treatment to the people. The work extended over one season only and the results obtained were very gratifying. At the present time most of those formerly afflicted with malaria have been apparently completely cured and no new infections are taking place. The community is continuing the maintenance of the ditches made by the crew working for the Board of Health and the town of Anderson has been converted from a discouraged fever stricken community totally lacking in enterprise and business prosperity to a town with characteristics just the opposite. The value of property and farm lands adjacent to the town has increased greatly and the movement of real estate, which formerly was dead, is now active. The citizens of this community appreciate thoroughly the value of anti-malarial measures such as they have recently seen exemplified. It is to be hoped that this demonstration of what is possible of accomplishment will result in similar work by other communities. The funds of the State Board of Health do not admit of work of this character throughout the state, but it was believed that if an actual demonstration were made other communities would see the wisdom of financing for themselves the work of mosquito eradication. Under the present mosquito abatement act the money that it is possible to raise under the provision of the special tax of not more than 10 cents per \$100 valuation is entirely inadequate for any sort of effective work. It is essential if malaria is to be eradicated from the state that some form of state aid be extended to these mosquito abatement districts, which are usually composed of rural territory and land that does not possess a sufficiently high valuation to yield the necessary funds under the present act. If the legislature were to see fit to appropriate funds at the rate of \$50,000 per year, the State Board of Health would be able to employ experts for the supervision of the work in the various mosquito abatement districts and much could be accomplished but even with this plan the ultimate complete extermination of malaria in California would be much farther in the future than if a larger sum were appropriated for distribution to local communities in the way of a subsidy for this work on the plan of the local appropriation of an equal amount.

PARASITOLOGY.

The work of the Division of Parasitology of the Bureau of Communicable Diseases has grown during the present biennium to be an established department of importance. The work is being financed at present from the regular funds of the Hygienic Laboratory, which prevents a continuation of the field surveys started under the direction of Professor Kofoid, chief of the division. The details of this work will appear under the report of the Bureau of Communicable Diseases.

Investigations carried on by this division have shown that amoebic dysentery, which was formerly regarded as exclusively a disease of the tropics, is prevalent in California and that there are many carriers of the organism causing this form of dysentery among returned soldiers from Europe and among many persons from Oriental countries. Limited surveys have been made by means of a houseboat equipped as a floating laboratory in the delta region of the Sacramento and San Joaquin valleys. As was suspected, many infections with intestinal parasitic diseases of Oriental origin were found among the Japanese and Indian laborers in these districts. The problem of the future for this department is further investigation as to the degree of danger that may exist for the population of the state from the entrance of these infections into California. The physicians of the state are at present being given a laboratory service for the diagnosis of these diseases and increasing use is being made by them of this department.

PLAGUE.

Bubonic plague for many years has been the subject of special comment in reports of the Secretary of the State Board of Health, and apparently it will continue to be a subject of extreme interest in California. The widespread prevalence of the infection among the ground squirrels of many counties of the state, forming as it does an endemic focus of the disease, is a matter of great concern, not only to California but to the entire country. In his report for 1916-1918, Doctor Kellogg, then Secretary of the State Board of Health, said, "Until plague infected ground squirrels are entirely eradicated from California, we shall always have a sword of Damocles hanging over our heads. So long as infection persists among the ground squirrels, the possibility of an extension of the disease to the rats of the cities, and consequently to the human population, will exist. It may be one year, it may be five years, or it may be twenty years before this lighting up of the virulence of the infection will occur, but we can surmise from the world history of plague, and from its known tendency to slumber in endemic foci, such as we have in the vicinity of San Francisco Bay, that this will happen some time." Since that time a sharp outbreak of pneumonic plague has occurred in the city of Oakland.

On August 15, 1919, a man named Di Bortoli, residing at 960 Forty-fifth street, Oakland, was taken sick with a high temperature, an auxiliary bubo and symptoms of congestion of the right lung. A physician was called, who at first made a diagnosis of influenza. This case was followed in rapid succession by twelve others, including two physicians and one nurse, all ending in death. The Division of Epidemiology traced the connection between all these cases and found that the first case undoubtedly contracted his infection by contact with infected squirrels, as he had gone squirrel hunting five days before the onset of symptoms. All of these cases died of the pneumonic form of plague, which is exceedingly fatal, and which is contagious from person to person, in this respect being unlike the bubonic form of the infection, which is carried by means of fleas from rats to man.

The occurrence of this group of pneumonic cases of plague is not at all reassuring, as it gives evidence of the possibility of this type of plague originating from squirrels at any time. In looking over the history of

plague in other parts of the world it will be observed that severe epidemics of the pneumonic form have occurred only in cold climates, and that in India, where plague is greatly prevalent, the usual type is bubonic, the pneumonic form having occurred in India in epidemic form only in higher altitudes where the temperature was low. According to Teague and Barber, who studied the Manchurian epidemic in 1910 and 1911, the favorable atmospheric conditions are low temperature and high humidity. In a special report of this particular outbreak of plague, Doctor Kellogg, Director of the Bureau of Communicable Diseases, makes the following statement:

“Adopting the conclusions of Teague and Barber then we may conclude that under the circumstances of high temperature and low humidity existing in Oakland at the time of this outbreak conditions were not favorable for the transfer of infected droplets carrying plague bacilli from one person to another excepting under conditions of the closest contact. The drying and consequent death of the bacillus was so rapid that the ordinary measures of prophylaxis which were easy of application sufficed to check the progress of the infection when all the existing cases were being cared for in hospitals. With the same line of reasoning we can surmise that if a different condition of temperature and humidity existed, the result would have been far different, and we are justified in drawing the conclusion that this epidemic teaches that we have still another danger to look forward to from the continued existence of plague among the ground squirrels in California.

The gravity of the situation is enhanced considerably when we realize the possibilities of a human case in the incubation stage of the disease, following contact with squirrel plague, journeying to some eastern state in the winter time and developing an infection such as Di Bortoli in the proper climatic setting for a pneumonic epidemic, which could easily be found in some of our eastern states in the winter time.

I desire to add my voice to the warning of previous secretaries, that the continued existence of plague in California is a menace of the first magnitude, and I desire to urge the legislature in California to appropriate sufficient funds to the State Board of Health to carry on an intensive campaign of extermination among the ground squirrels of the infected districts. The problem is so large that federal aid will be required, and the American Public Health Association at its recent meeting in San Francisco recognized this by a resolution calling for Congress to appropriate one million dollars for plague suppressive measures.

LABORATORY SUPERVISION.

Coincident with the rapid advance that is being made in the usefulness of biological laboratories in the diagnosis of disease and in the manufacture of preventive and curative serums and vaccines there has been a corresponding demand for the establishment of laboratories which is being met by the entry into the field of many new laboratories. These laboratories are both official and unofficial, public and private. Some of them are maintained by municipalities among which the volume of work and the appropriations available for the support of the work varies greatly. The consequence is that there is an increasing demand for laboratory workers and too often it happens that insuffi-

ciently trained workers are given responsible positions. Among the commercial laboratories which serve the public are some in which the commercial prosperity of the institution is the first consideration and in which pure science takes a secondary place. There is no sort of supervision whatever at present over any of these laboratories and no restrictions over the employment of persons doing highly technical work, no regulations required nor any inspection of the manner of conduct of these laboratories. It is true that there is a federal supervision over laboratories producing biological products which engage in interstate commerce but the federal supervision does not extend to any laboratory confining its business within the borders of the state.

There is urgent need for some sort of supervision by the State Board of Health of all laboratories, both municipal and commercial within the state. Such regulations need not extend beyond provisions for insuring the competence of laboratory workers, the provision of a reasonably adequate equipment for the work undertaken, and the proper keeping of records for the information of the Board of Health on matters concerning the public health.

SMALLPOX.

Smallpox, which for the five year period ending in 1917 averaged between 400 and 500 cases per year, has during this biennial period shown a rapid and alarming increase in prevalence. During the year 1918, the number of cases reported to the Board of Health was 1100. During the year 1919 the number of cases was 2053, practically a 100 per cent increase. For the first six months of 1920, which ends the biennial period covered by this report, the number of cases was 2424, which is at a rate of more than 100 per cent increase over the preceding year. The reason for this great increase is plain and can be traced to the growing up in recent years of a large unvaccinated population, which in turn is due to the very ineffective vaccination law which is now on the statute books. The present law provides for the filing of vaccination certificates by school children at the beginning of every school year. These certificates are of two types, one is a certificate of successful vaccination, the other a certificate of conscientious objection to vaccination filed by the parents of the child. Upon the appearance of smallpox in any neighborhood, the State Board of Health is authorized to make an investigation and to establish districts within which all unvaccinated children, which would of course include those who had filed certificates of conscientious objection, are excluded from attendance at school. This law was intended to enable those who wished to defer vaccination until the actual presence of smallpox so to do. Inasmuch as the filing of a certificate of conscientious objection, blanks for which were frequently furnished by school children, was following the line of least resistance, the result has been that vaccination against smallpox has been very much neglected, and it is estimated that nearly 75 or 80 per cent of the children in most communities of the state are at the present time unvaccinated. This does not mean that 75 per cent of the people are opposed to vaccination, for it has been the experience of the medical officers of the department in the control of smallpox in individual communities that when vaccination is offered to the people during the prevalence of the disease the vast majority avail them-

selves of the opportunity to become protected. Whatever may be said for or against compulsory vaccination, there is no question that those communities having such a law are immune to smallpox. During the first six months of the year 1920, the city of greater New York, with a population of nearly double that of the State of California, had six cases of smallpox while during the same period the State of California, with little more than half the population, and with no compulsory vaccination law, such as exists in the city of New York, had 2424 cases. It is fortunate for the people of this state that the type of smallpox that has been prevailing is very mild. No one knows at what moment the character of the disease will change and fatal cases and cases that are not fatal but that leave the victims scarred and disfigured for life may occur. This is characteristic of smallpox and we have no knowledge of the laws of nature that govern the rise and fall in virulence of epidemics in different places and at different times. It is indeed strange that when we are in possession of an absolute preventive of such a loathsome disease as is smallpox that the public should be so apathetic in making use of it, and it is still more strange when one reflects that this preventive as applied in these modern days is not only painless in its application but is positively free from any risk whatever.

It is to be hoped that the present vaccination law, which gives to the public only a false sense of security, and which in its operation impedes rather than aids the work of smallpox control, may be stricken from the statute books.

RABIES.

Rabies, which, following the wide spread epizootic of 1912 and 1913, had subsided to a very low rate in California, has during the last year of the present biennial period shown a tendency to increase, particularly in the interior valleys of the state. The present system of control, which places the burden of responsibility upon individual communities, is unsatisfactory. The usual history of rabies in all parts of the world is that during the period of popular alarm muzzling ordinances are adopted, which are discontinued immediately upon the subsidence of canine rabies and before the infection has been completely eradicated from the community. There is always a delay in applying this very effective measure and the result is that rabies continues to be endemic in nearly all communities. That rabies can be easily exterminated was demonstrated in England when a few years ago, by some unexplainable variation in the usual procedure, the muzzling of dogs was continued for two years after the last known case of rabies. The disease was completely stamped out. It was kept out of England by the quarantine which was imposed upon all dogs brought into the country. The relaxation of this protective measure during the war has resulted in the reintroduction of rabies into England. In California the State Board of Health should be strengthened for the fight against rabies by adequate appropriations for the support of field men who can be detailed under the chief sanitary inspector for the enforcement of muzzling laws which also should be provided for enforcement when required by the State Board of Health. The existence of rabies is a much more serious matter than is generally appreciated. Its importance is not to be measured by the toll of human deaths, which is usually very

small, but by the large number of people who are compelled at great expense, annoyance and inconvenience to undergo the Pasteur treatment for the prevention of rabies on account of having been bitten by rabid dogs. The importance of the problem is also appreciated by those agriculturists who have suffered great losses in valuable stock that have been infected by stray dogs.

CHILD HYGIENE.

One of the greatest advances that has been made in the Department of Health during the biennial period just ended is the establishment of a Bureau of Child Hygiene. The result of the army examinations served to bring home to the people in very graphic manner the public health importance of the great prevalence of defects and disabilities that would have been preventable had they been observed by a competent department of preventive medicine earlier in life. Statistics in communities that have a thorough system of school medical inspection show that nearly 2 per cent of all school children have some form of organic heart disease; that approximately 5 per cent have some form of disability or the deformity of the bony structures, such as spinal curvature, flat feet, etc.; that 30 per cent have diseased tonsils and adenoids; that nearly 75 per cent have defective teeth, etc., etc. The great need for child hygiene work can, therefore, be appreciated for the children of the country, not only in the schools, but more particularly for the children of the pre-school age.

The functions of a Child Hygiene Bureau include such matters as the education of mothers in the proper nurture of babies, the improvement of sociological conditions, and the education of mothers in matters having a bearing on the pre-natal development of the child, the co-ordination of non-official health agencies whose activities comprise all forms of child welfare, the stimulation of better birth registration, the provision of proper nursing and obstetrical care for mothers, the establishment of summer camps for children, the holding of child welfare exhibits, etc.

According to the census of 1910, one out of every five deaths at all ages occurs under the age of one year, and one out of every three deaths at all ages occurs under the age of five years. Communicable disease is also vastly more prevalent among children under five years of age than in any other age group. The most favorable period of life for the achievement of results in public health, which is so largely a matter of education, is the period of childhood. Health habits are during this period more easily fixed and good health itself more easily established than after the age of maturity. Work in child hygiene is, therefore, one of the most important duties of a department of public health, and it is to be hoped that the state legislature will recognize this in adequate appropriations for the continuation of this department which has been so recently established.

W. M. DICKIE, M. D.,
Secretary.

REPORT OF THE BUREAU OF ADMINISTRATION.

SUMMARY OF ACTIVITIES OF DISTRICT HEALTH OFFICER,
ALLEN F. GILLIHAN, M.D., SACRAMENTO, JULY 1, 1918 TO JUNE 30, 1920.*Administrative:*

Advising and instructing health officers.....	19
City surveys	6
Annual meetings attended.....	5
County hospital plans.....	3
Organizing health departments.....	2
Public health lectures.....	29
	64

Control of Communicable Diseases:

Chickenpox outbreaks	9
Diphtheria outbreaks	7
Influenza outbreaks	10
Lethargic encephalitis investigations.....	2
Leprosy investigations	1
Malaria investigations	5
Measles investigations	1
Morbidity among Indians investigations.....	2
Nonreporting of morbidity investigations.....	2
Plague outbreak	1
Poliomyelitis investigation	1
Scarlet fever investigation.....	1
Smallpox outbreaks	38
Tuberculosis investigations	2
Typhoid investigations	2
Veneral disease investigations.....	2
	86

Conservation of Child Life:

Children's year drive in cities.....	3
Physical examination in orphanage.....	1
State Fair	1
Mental defective family investigation.....	1
	6

Sanitation:

In cities	11
Rural	2
Shipyards	2
Schools	3
Water supply	1
Hotels and hospitals.....	2
	21

Vital Statistics:

Investigating burials, without permits.....	3
Investigating birth registration.....	3
Advising local registrars.....	7
	13

**SUMMARY OF ACTIVITIES OF DISTRICT HEALTH OFFICER,
GAVIN J. TELFER, M.D., LOS ANGELES, JULY 1, 1918 TO JUNE 30, 1920.**

Administrative:

Advising and instructing health officers.....	21
Annual meetings attended.....	5
Organizing health departments.....	3
Miscellaneous	28
	57

Control of Communicable Diseases:

Chickenpox outbreaks.....	4
Diphtheria outbreaks	14
Dysentery	3
Influenza outbreaks	12
Lethargic encephalitis investigations.....	4
Leprosy investigations	2
Nonreporting of morbidity investigations.....	4
Poliomyelitis investigations	2
Rabies	2
Scarlet fever investigations.....	4
Smallpox outbreaks	50
Typhoid investigations	8
Typhus	1
Venereal disease investigations.....	1
Miscellaneous	8
	119

Conservation of Child Life:

Physical examination in orphanage.....	1
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Sanitation:

In cities	9
Rural	3
Schools	2
Water supply	5
Milk supply	2
Sewage disposal	7
	28

Expenditures—Seventieth and Seventy-first Fiscal Years.

Expended from appropriation for	Seventieth fiscal year	Seventy-first fiscal year	Total
Contagious disease	\$37,105 74	\$25,895 84	\$63,001 58
Child hygiene		6,415 83	6,415 83
District health offices.....	24,188 98	12,201 89	36,390 82
Hygienic laboratory	27,538 09	23,945 88	51,484 57
Nurses' registration	13,918 86	12,063 68	25,982 54
Printing	5,045 51	3,805 31	8,850 82
Pure food and drugs.....	36,828 83	35,698 72	72,497 55
Salary, stenographer	1,200 00		1,200 00
Sanitary engineering	21,523 70	24,448 45	45,975 15
Social hygiene	30,731 03	52,684 99	83,416 02
Statutory salaries	25,100 00	23,900 00	49,000 00
Traveling and contingent.....	28,465 30	31,811 78	60,277 08
Tuberculosis:			
Office expenses	12,851 33	16,796 85	29,648 18
Subsidies	50,496 36	74,753 64	125,250 00
Malaria control		10,298 75	10,298 75
Plague investigation		2,000 00	2,000 00
Totals	\$314,977 28	\$356,681 61	\$671,658 89

REPORT OF THE BUREAU OF COMMUNICABLE DISEASES.

W. H. KELLOGG, M. D., Director.

DIVISION OF THE HYGIENIC LABORATORY.

KARL F. MEYER, D. V. M.	Consulting Bacteriologist
GRACE A. MACMILLAN	Bacteriologist
ESCHSCHOLTZIA LICHTHARDT, A. B.	Bacteriologist
VIOLET M. BATHGATE B. S. <i>Southern Branch, Los Angeles</i>	Bacteriologist
J. R. SNYDER, M. D., <i>Northern Branch, Sacramento</i>	Bacteriologist
ANNETTE STUART, A. B.	Technician
LUCY POWERS, <i>Southern Branch, Los Angeles</i>	Technician
FLORENCE B. SHACKLEFORD	Clerk
ELLEN I. HILDEBRANT	Stenographer
GRACE B. NAQUIN	Stenographer

DIVISION OF EPIDEMIOLOGY.

FRANK L. KELLY, M. D., Gr. P. H.	Epidemiologist
JOHN N. FORCE, M. D. Gr. P. H.	Consulting Epidemiologist
IDA MAY STEVENS, M. A., P. H.	Assistant Epidemiologist

DIVISION OF PARASITOLOGY.

C. A. KOFOID, Ph. D.	Consulting Parasitologist
A. M. BEAN	Field Agent

DIVISION OF ENTOMOLOGY.

WM. B. HERMS, M. S.	Consulting Entomologist
STANLEY B. FREEBORN, M. S.	Consulting Entomologist

Growth of the Laboratory Division.

Attention is directed to the phenomenal increase in the work of the laboratory during the last fiscal year of the period. The total number of examinations was 30,000+ against 15,000+ for the year before. A large part of this increase has been in the diagnosis of venereal diseases, particularly the Wasserman test. The work involved in examinations of this character is much more time consuming than most of the other special examinations, and therefore represents an increase of work out of proportion to the increase as represented by the figures of examinations. This increase in work has been accomplished only by the most loyal cooperation on the part of the entire staff, who have been obliged to work under high pressure most of the last year. It has also been necessary to forego normal expansion in various lines of communicable disease control that would have been undertaken with an adequate staff. As examples, the standardization of laboratory procedure, the distribution of vaccine virus and the preparation and distribution of materials for the Schick test, and immunization against diphtheria, may be mentioned.

The appropriation for the Bureau of Communicable Diseases for the present biennium was \$5,000 less than for the previous fiscal period. This, together with the increasing costs of laboratory supplies, and the increase of laboratory work, has operated to cripple the field activities of the Bureau in the control of communicable diseases. It is to be hoped for the welfare of the people of the State that this most impor-

tant department will be more generously provided for by the next legislature.

During the biennium just ended the Bureau of Communicable Diseases found special interest in the unusual epidemic occurrence of three diseases which taxed the resources of the department to the utmost. These three diseases which require special mention are plague, influenza and smallpox.

Influenza.

Influenza is a disease that is epidemic in many parts of the world, attracting little attention between the periodic rises in virulence when it becomes pandemic. These pandemics exhibit a certain degree of periodicity in their appearance and are separated by twenty to thirty year intervals. The visitation we have just experienced was the severest in history and was marked by an unprecedented mortality. Now that it has come and gone, the most profitable discussion regarding it is along the line of our experience in control measures. When another pandemic of influenza visits the world, the health officers of that period will refer to the records of the present for information concerning the clinical peculiarities of the cases, the mortality rates, and the preventive measures adopted with the results observed. Articles on influenza by the director of the bureau have already been printed in the Monthly Bulletin of the California State Board of Health.

The Wasserman Test for Syphilis.

Many variations of the original Wasserman technique have been developed by different workers in the field of serology in attempts to simplify the method, increase its sensitiveness or to accommodate the laboratory to varying conditions regarding the availability of different animals and reagents. It has seemed particularly desirable that some of the more sensitive methods, such as those using noninactivated serum, might be improved in dependability. Some work along this line has been carried on in the Hygienic Laboratory and a method has been perfected.

TABLE. 1. NUMBER OF EXAMINATIONS AND RESULTS, JULY 1, 1918, TO JUNE 30, 1920.

Years	Anthrax		Diphtheria		Dysentery		Gonococcus		Influenza	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1918....	4	28	486	1,840	1	12	184	404	11	29
January to June, 1919....	21	600	3,116		2	17	255	654		
July to December, 1919....	3	26	2,080	9,536	7	23	231	796		
January to June, 1920....	2	11	1,650	6,084	3	8	212	751		
Totals	9	86	4,885	20,516	13	60	682	2,685	11	29

Years	Leprosy		Malaria		Meningitis		Paratyphoid Widal		Paratyphoid (excreta)	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1918....		2	17	92	4	46	2	5		
January to June, 1919....		5	79			17				
July to December, 1919....			150	456	3	4	2	4		
January to June, 1920....	1	2	24	157	3	11	4	4		2
Totals	1	4	205	784	10	78	8	13		2

Years	Plague		Pneumonia		Rabies		Syphilis		Tuberculosis (sputum)	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1918....			6	11	9	24	172	2,743	125	477
January to June, 1919....			4	9	23	42	312	2,664	173	674
July to December, 1919....	3	15			20	46	427	3,767	178	730
January to June, 1920....	1	3	2	2	56	101	876	5,437	192	900
Totals	4	18	12	22	108	212	1,786	15,651	668	2,841

Years	Tuberculosis (pus)		Tuberculosis (spinal fluid)		Tuberculosis (urine)		Typhoid (Widal)		Typhoid (excreta)	
	Positive	Total	Positive	Total	Positive	Total	Positive	Total	Positive	Total
July to December, 1918....				1			127	414	5	46
January to June, 1919....							91	233	7	60
July to December, 1919....					1	10	172	551	12	110
January to June, 1920....		3	2	5		4	79	378	3	45
Totals		3	2	6	1	14	469	1,626	27	270

PREVENTIVE THERAPEUTICS.

Pasteur treatments for the prevention of rabies by the State Hygienic Laboratory:	
Main Laboratory at Berkeley.....	29
Northern Branch at Sacramento.....	2
Southern Branch at Los Angeles.....	10
Laboratory of the San Francisco Board of Health, by deputized bacteriologist	7
Vaccine issued by the State Hygienic Laboratory:	
Triple typhoid-paratyphoid vaccine—	
Number of physicians to whom vaccine was sent.....	143
Number of complete treatments sent.....	2478
Ophthalmia neonatorum prophylactic outfits distributed:	
Number of outfits, containing two ampoules each issued.....	20,548

Years	Typhoid (blood culture)		Typhus		Miscellaneous
	Positive	Total	Positive	Total	
July to December, 1918.....	1	3			33
January to June, 1919.....					39
July to December, 1919.....				1	44
January to June, 1920.....	3	4			32
Total	4	7		1	148

DIVISION OF EPIDEMIOLOGY.

FRANK L. KELLY, M. D., Epidemiologist.

SMALLPOX.

Since 1916 smallpox has been steadily increasing in California. This is probably due to the fact that the compulsory vaccination act was repealed in 1911 so that by 1916 we had a large number of non-immune children attending the schools. The act substituted for the compulsory vaccination act allows unvaccinated children to attend school by filing a certificate stating their parents are opposed to vaccination. While this substituted act is entitled "An act to encourage and provide for a general vaccination for all public and private schools of California," how well it fulfills its purpose is shown by the fact that from seventy to eighty per cent of the parents have filed certificates of one kind or another stating their opposition.

On account of the mildness of the disease, the mortality being less than three-tenths of one per cent, the people of the State have not become sufficiently alarmed to see that the disease is stamped out. They fail to heed the warnings of the health officials with the consequent spread of the disease as a result.

As vaccination is the only method of controlling this disease and as investigations have repeatedly shown that only from twenty to twenty-five per cent of the school children are vaccinated, the efforts of the State Board of Health have been directed to popularizing vaccination. We have given wide publicity to the prevalence of smallpox and to the benefits of vaccination. Through these efforts many hundreds of persons have been vaccinated but how small a proportion is shown by the steady increase of the disease, there having been two hundred forty-

eight cases in 1916, three hundred twenty-nine in 1917, eleven hundred in 1918, two thousand two in 1919 and two thousand two hundred twenty for the first six months of 1920.

PNEUMONIC PLAGUE.

In August and September, 1919, an epidemic of thirteen and possibly fourteen cases of pneumonic plague occurred in Oakland. The first six or seven cases were thought to be a severe type of influenzal pneumonia. When Dr. Crosby, Health Officer of Oakland, noticed how rapidly fatal the disease was in this group of patients he ordered an autopsy on one of the cases. As the body had been embalmed no bacteriological work was possible but Dr. Moore of the Western Laboratories and Dr. Tiffany, Autopsy Surgeon, concluded that it was a case of influenzal pneumonia. An autopsy several days later on an unembalmed body lead Dr. Moore and Dr. Nusbaumer to suspect plague both from the appearance of the organs and from the bacteriological findings, bipolar staining organisms having been demonstrated in smears from both the lungs and spleen. The diagnosis of pneumonia plague was confirmed by both the State Hygienic Laboratory and the U. S. Public Health Service Laboratory in San Francisco.

Steps were immediately taken to prevent the further spread of the disease by inspection and laboratory tests of all suspicious cases and autopsy of all suspicious deaths. A rat survey of the city was undertaken though all the evidence pointed to the original infection having been contracted from squirrels. No infected rats were found.

The epidemiological investigation showed that the first case was of the bubonic type contracted undoubtedly from infected squirrels. The man had been hunting in an infected area and had brought home squirrels five and seven days previous to his illness. Although originating as a bubonic type the pneumonic form developed as a terminal infection and the disease was then rapidly transmitted by droplet infection. The rapidity of the spread is shown by the fact that all of the contact cases occurred in a period of thirteen days.

It is very evident that the medical profession of the Pacific Coast should be continually on their guard for cases of plague which may occur at any time so long as the infection exists among the rodents of the state. It should be remembered that in the early period of plague epidemics the first cases as very apt to be overlooked and mistaken for other conditions. The bubonic and septicemic form is frequently mistaken for typhoid fever, pyogenic infections, etc. All cases with acute enlargement and tenderness of the lymphatic glands should be looked on with suspicion and bacteriological examination made wherever possible. The pneumonic form is particularly hard to identify, excepting by bacteriological tests. On the Pacific Coast bacteriologists should be on a constant lookout for the presence of bipolar staining bacilli in the sputum of pneumonia cases.

RABIES.

Rabies is again increasing in California as is shown by the following figures: In 1918 there were thirty brains found positive in the State Hygienic Laboratory, while in 1919 there were forty-three positives and in the first six months of 1920 there were fifty-six. Over

half of the fifty-six cases were in Fresno, Tulare, Kings and San Joaquin counties. The situation was foreseen the latter part of 1919 and the State Board of Health endeavored to get these counties to institute control measures. This was finally done in Fresno and Kings counties in the spring of 1920 and the disease was soon practically eradicated in them but has continued to spread in the others.

It has been the endeavor of the State Board of Health to have local control measures enforced at the first appearance of the disease and when this has been done it has been promptly stamped out. However, in many instances the local authorities have not been sufficiently aroused by only one or two cases and in some instances it has taken human deaths to bring them to a realization of the danger.

INFLUENZA.

During this biennial period the State was visited by the pandemic of influenza. As the disease made its appearance on the Pacific Coast two or three months later than in the Eastern States opportunity had been given for the study of disease. From this study and from the study of previous epidemics the extent and character of the epidemic was quite accurately predicted. Various methods for the control of the disease were instituted in some localities early in the epidemic, in others late. It was at first thought that universal masking would hold some hope of control but this proved to be of no value as was every other measure. In spite of every precaution taken the disease ran the typical course of an uncontrolled epidemic except in certain small communities where the chance for contact was not great and where prompt quarantine and isolation seemed to have some effect.

TYPHOID FEVER.

From June, 1918, to July, 1920, the State Board of Health has investigated nineteen outbreaks of typhoid fever. Very few of these have assumed the proportions of an epidemic, only four being of ten or more cases. However, the Pittsburg water-borne outbreak of over 135 cases is one of the largest that has ever occurred in the State. Besides the Pittsburg epidemic, two others were due to water. Four of the outbreaks were milk-borne.

While, as stated above, only four of the outbreaks were of ten or more cases, the importance of investigating the smaller outbreaks is shown by the discovery of seven carriers from our nineteen investigations. If a thorough investigation could be made of each case of typhoid fever many unsuspected carriers would be brought to light and the incidence of the disease lowered.

DIAGNOSTIC INVESTIGATIONS.

The following investigations have been made to confirm or establish diagnosis:

1918—After July 1.

Smallpox—Richmond, Oakland, Modesto, 'Crows Landing.

1919.

Smallpox—Chico, three times: Walnut Creek, Oaks, Alameda, Oakland, five times; Hayward, Napa, Stockton, San Jose, Red Bluff.

Pellagra—San Joaquin County; *Leprosy*—Stanislaus, San Joaquin and Sonoma counties; *suspected plague*—Oakland, twice; *suspected typhus fever*—San Francisco; *scarlet fever*—Oakland.

1920.

Suspected plague—San Jose, Oakland; *typhus fever*—Los Angeles; *smallpox*—Napa, Fillmore, Fort Bragg, Rialto, Perris, Los Angeles County, Venice, Claremont, Long Beach, Santa Monica, Azusa, Glendora, Glendale, Arcadia, Oakland, Redlands, Downey, Pasadena, Anaheim, Newark, San Luis Obispo, Santa Paula, Lankershim, Burbank, Corona.

Epidemiological Investigations.

TYPHOID FEVER.

1918.

July—Sacramento, 4 cases; Hercules, 11 cases. *August*—Loyalton, 5 cases. *September*—Napa, 4 cases; near Corcoran, 5 cases.

1919.

January—Santa Monica, 5 cases. *February*—Highgrove, 18 cases. *April*—Wilts, 7 cases. *May*—Santa Paula, 3 cases. *June*—Pomona, 15 cases. *August*—Santa Paula, 4 cases; Anaheim, 9 cases. *October*—Fresno County, high incidence.

1920.

February—Riverside, 3 cases. *March*—S. S. Coyote, 3 cases. *June*—Anaheim, 2 cases; Santa Paula, 1 case; Mendocino county, 1 case and dysentery; Pittsburg, 135 cases.

BACILLARY DYSENTERY.

1918.

Oakland, Hiss Russell Y, 12 cases.

1919.

Colusa, Shiga, 13 cases; Lancaster, 32 cases; Rialto, 9 cases.

SMALLPOX.

1918.

Crockett, 20 cases; Vallejo, 6 cases; Benicia, 8 cases.

1919.

Chico, 69 cases; Napa, 76 cases; Watsonville, 64 cases; San Jose, 41 cases; Jackson, 18 cases.

1920.

Santa Barbara, 111 cases; Rio Vista, 16 cases; Los Gatos, 5 cases; Long Beach, 7 cases; Lankershim, 8 cases; Azusa, 14 cases; Santa Monica, 12 cases; Corona, 23 cases; Bishop, 35 cases; Santa Cruz, 12 cases.

DIPHTHERIA.

1919.

August—Haywards. *September*—Manteca. *October*—Mayfield; Vallejo. *November*—Benicia. *December*—Carpinteria.

1920.

January—Bakersfield.

MALARIA.

1919.

March to July—Chico. *July to December*—Anderson. *June*—Redding; Durham.**PLAGUE.**

1919.

September—Oakland, 13 cases, pneumonic.

1920.

April—Alameda County, 1 case, bubonic.**INFLUENZA.**

1918.

Dunsmuir, Palo Alto.

1919.

San Jose; Richmond.

MISCELLANEOUS.

1919.

Paratyphoid fever—Napa; *Botulism*—Chico.*Septic sore throat*—Gilroy.**DIVISION OF ENTOMOLOGY.**

W. B. HERMS, Consulting Entomologist.

The usual satisfactory cooperation between the State Board of Health and the University of California has been maintained during the past biennium and considerable progress has been made within the scope of our work. The office of Consulting Entomologist has been much more than that of an office or laboratory consultant as evidenced by the extensive field operations outlined below.

MALARIA-MOSQUITO SURVEY.

The malaria mosquito survey authorized March 4, 1916, and begun May 10, 1916, was completed July 31, 1919, covering the entire state and requiring about three summers for its completion exclusive of the summer of 1918. During this time a distance of over 18,000 miles was traveled by automobile and 690 mosquito collections were made consisting of 6,650 mosquitoes of all species. The survey was under the personal direction of the consulting Entomologist who was present throughout. Many important facts were discovered during the course of this work, among them: (1) Anopheline mosquitoes occur in all but the following California counties, viz, Alpine, Del Norte, Imperial, Inyo and Mono and that more extensive search may reveal them in one or more of these, notably Imperial and Inyo, but that these Anophelines are of three species, namely *A. quadrimaculatus*, *A. punctipennis* and *A. pseudopunctipennis*, of which only the first two need be seriously considered from the standpoint of malaria transmission; (2) that although the anophelines are widespread in their occurrence, malaria is largely localized, i.e., about three-fifths of all the endemic malaria in the state occurs in thirteen counties; namely, Shasta, Butte, Tehama, Yuba, Amador, El Dorado, Calaveras, Kings, Sutter, Yolo, Placer, Glenn and Sacramento, and that the Sacramento Valley has nearly twice as much malaria as the San Joaquin Valley with Shasta, Butte,

Yuba and Sutter in order of incidence for the Sacramento Valley, and Kings, Merced, Kern and Tulare for the San Joaquin Valley; (3) that more than 50 per cent of all the mosquitoes collected in the sixteen Northern California counties were *Anopheles* and 80 per cent of these were *A. quadrimaculatus* and *A. punctipennis*, efficient malaria carriers, which accounts for the high malaria rate; (4) an abundance of data has been collected concerning mosquito breeding places and necessary measures for control. A card index is now in preparation which will show the localities visited together with species of mosquitoes taken, malarial conditions, breeding places, recommendations for control, etc. A map showing the distribution of anophelines in California is also in course of preparation. Eventually a monograph of the mosquitoes in California will be prepared.

ANDERSON DEMONSTRATION DISTRICT.

For many years we had hoped to be able to conduct a demonstration of antimalaria work in some malarial part of the state, putting into practice the best experience accumulated during the past ten years in the various crusades already established, notably in Placer and Butte Counties. This opportunity was afforded during the summer of 1919, when funds amounting to \$10,000 from the state emergency fund was appropriated by the Governor for antimalarial work at Anderson, Shasta County. The campaign was placed under the supervision of Professor S. B. Freeborn, Assistant Consulting Entomologist, and Mr. Mason Franklin, in immediate charge of field operations. Field operations were begun August 6, 1919, and closed December 15, 1919, during which time a most rigid application of the following three principles of malaria control was carried out: (1) control of mosquito breeding; (2) quinine treatment and cure of patients; and (3) screening of homes. A partial survey made June 25, 1919, showed a positive blood smear incidence of 29.2 per cent and a history incidence (having had malaria within three months) of 72.5 per cent.

NEW ABATEMENT DISTRICTS.

Due to the encouragement received from the Anderson work, the Clear Creek District was organized in 1920, including territory north of Anderson. There are now fourteen Mosquito Abatement Districts in the state, viz: Oroville and Durham in Butte County; Los Molinos in Tehama County; Redding, Anderson, Cottonwood and Clear Creek in Shasta County; Fair Oaks in Sacramento County; Boyes Hot Springs in Sonoma County; Bakersfield in Kern County; San Rafael in Marin; San Mateo and Redwood City in San Mateo, and Palo Alto in Santa Clara County. Much interest was manifested in the formation of a district at Riverside but this has not been accomplished, nor has the work done at Terminal Id. near Los Angeles been put on a permanent basis.

INVESTIGATIONS AT VINA.

While it was possible to carry on certain investigations to advantage during the process of the survey and while control operations were in progress, there was much that could only be done under field laboratory conditions with special equipment. During the summer of 1920, there-

fore, through the kindness of Messrs. W. E. Woolsey and F. T. Robson, who donated the use of comfortable quarters and the freedom of their property, a field laboratory was established on the Stanford Ranch near Vina in Tehama county. In addition to acquiring much valuable information pertaining to the ecology of Anophelines and other species as well, we were able to experiment with certain control measures relating to the periodic drying out of irrigation ditches to destroy immature stages of mosquitoes. By laboratory experiment it was found that the eggs of *Anopheles punctipennis* removed from the water for twenty-four hours failed to hatch after returning the same to favorable situations. On the other hand the eggs of *Anopheles quadrimaculatus* were able to withstand dessication for seventy-two hours. Daily collections of mosquitoes were made at several stations both on the ranch and at Vina. Twelve species occur in this vicinity, among them three species of Anophelines, namely; *A. quadrimaculatus*, *A. punctipennis* and *A. pseudopunctipennis*, of which the first two are effective malaria carriers and very abundant.

In addition to much valuable data pertaining to the breeding habits of Anophelines, we were able to determine accurately the number of eggs deposited by a large number of individuals. These observations prove that the average number of eggs deposited per individual is much greater than heretofore believed, that is the average for *Anopheles punctipennis* based on thirty-three layings was 203 with a range of from 83 to 321, while for *A. quadrimaculatus* based on thirty layings it was 209 with a range of from 140 to 315.

A microscopic examination was also made of three hundred female Anopheline mosquito stomachs in order to determine the rate of malaria infection under field conditions. Three-fourths of the stomachs examined were from mosquitoes collected under bridges, the rest being from mosquitoes taken in outhouses and a dwelling. All examinations proved negative. So far as the examination of the outdoor mosquitoes (taken under bridges) is concerned, this would seem to indicate that there is relatively little danger of infection from the bites of such mosquitoes.

RICE AND MALARIA.

With the introduction of rice in California, there also arose a grave fear that this would complicate our malaria problem. We, therefore, at once began closely to observe the rice fields, expecting these, like those in Arkansas and elsewhere, to produce their quota of Anopheline mosquitoes and result in an increase in the malaria rate in the immediate vicinity. In the chief rice growing districts of the Sacramento Valley this did not prove to be the case, although myriads of mosquitoes, including some Anophelines, did develop, though not largely in the rice fields proper but in the seepage areas outside the checks and along the roadsides. During the spring of 1920 a considerable acreage of rice was planted in the vicinity of Redding and there appeared also numerous Anopheline larvæ in these fields, in striking contrast to prevailing conditions south of Chico. Soil conditions also show a marked difference in these two areas, porous and more or less sandy in the Redding area, and heavy and nonporous in the area south of Chico. This at once has a definite bearing on the water-holding property of the soil; thus in the Redding area it is necessary to continuously replenish

the water, producing comparatively fresh water, while in the Chico area, owing to the rather impervious condition of the soil, the water soon becomes quite stagnant in the popular sense. This condition in turn has a direct bearing on the breeding habits of our *Anophelines* which prefer rather fresh, clean water for breeding purposes.

From these observations it seems safe to assume that rice grown on soil which is porous will probably result in a malaria menace, while rice grown on the so-called goose-lands, or impervious soils, may not prove a serious menace in this connection.

MOSQUITO CONTROL ASSOCIATION.

Another step in the direction of mosquito control in California was taken early in the spring of 1920, when an association was organized in Berkeley and named the "Mosquito Control Association of California." This organization met in a conference at Berkeley March 26-27 for purposes of formal organization and discussion of papers. There were delegates present from a majority of the mosquito abatement districts and a number of other persons interested in the subject. The Consulting Entomologist was elected president and Mr. N. M. Stover, superintendent of the Three Cities and Marin County Mosquito Abatement districts, was elected secretary.

The program consisted of papers on drainage methods, oiling methods, influence of rice fields, the urban and rural problems, salt marsh problems and a laboratory session dealing with the identification of mosquitoes and the diagnosis of malaria, also a demonstration of publicity methods. At the round table smoker after a dinner at the Faculty Club a discussion of finance and legislation was carried on, in which both the president and secretary of the State Board of Health participated. The conference closed with a field trip to the vicinity of San Mateo for the purpose of inspecting the mosquito control operations at that point. The conference members enjoyed a banquet as the guests of the Three Cities Mosquito Abatement District after which adjournment took place. The next annual meeting will probably be held in the northern Sacramento Valley in close touch with one more of the mosquito abatement districts in that territory.

HEALTH OFFICERS' CONFERENCES.

Both the Consulting Entomologist and the Assistant Consulting Entomologist have been in regular attendance upon the meetings of the annual Health Officers' Conferences in conjunction with the League of California Municipalities. At these meetings we have presented papers, particularly on malaria and malaria control, and have assisted whenever possible in answering questions and giving information and propagating sentiment.

FLY CONTROL AND FARM SANITATION.

There has been much interest in farm sanitation, particularly fly control, during the past biennium. Several widespread campaigns were carried on through the farm bureaus of Shasta, San Joaquin and San Bernardino counties, where much time was spent in actual farm visitation, going from farm to farm with the Home Demonstration

Agent, holding many informal meetings in homes and giving illustrated lectures. Great interest was manifested in this work and no doubt the idea of carrying sanitary information direct to the farmer on his ranch will bear bountiful fruit.

Several of these sanitary tours were made during the winter months, December and January, for two reasons, first the farmer has more leisure at this time for the consideration of such matters and secondly sanitary operations begun at this season of the year forestall early fly and mosquito breeding, and furthermore the habit of keeping things clean may be acquired if exercised two or three months before spring opens.

Vast numbers of fly larvæ, most of them nearly full grown, were found in a dormant or semidormant condition in practically every outdoor manure pile examined during the winter. There was practically no breeding in the newly added fresh, warm manure on top of the heap, but invariably there were numbers of larvæ as above indicated in the deeper portions of the pile. This fact points to the desirability of spreading the manure in order to expose the larvæ to the weather, which will result in their destruction and will materially lessen the number of flies in the spring, and if proper manure disposal is continued will result in fewer flies during the summer. Mosquito control by means of oil sprays and drainage carried out most diligently in the late summer and autumn to eliminate the overwintering mosquito will also result in much benefit.

RECOMMENDATIONS.

The experience of the past two years emphasizes certain recommendations made in our previous reports, namely, that there should exist a much closer cooperation between the authorized representatives of the State Board of Health and the mosquito abatement districts. The success of the work at Anderson stands as testimony to the value of such cooperation. The success of the Anderson District also bears witness to the fact that state aid is necessary in our most malarial districts and that such state aid is not only appreciated, but that it is a wise investment from the standpoint of the state as a whole.

Those communities which need malaria control most are least able to help themselves and, as at Anderson, it is the duty of the state to rehabilitate them, not by doing all the work for them, but by personal assistance over a period of a year or two, during which time the officers of the local district actively engage in carrying their share of the responsibility.

It has already been recommended (see State Board of Health Monthly Bulletin for December, 1919, p. 12) that the state expend annually for a period of ten years, the sum of \$70,000 to \$100,000 for malaria control. The annual loss which the state as a whole sustains directly because of malaria through loss of work days (about 168,000 work days), loss of life, medical attention, etc., is estimated at about \$1,600,000. The annual amount suggested for control purposes represents from 4½ to 6 per cent of this annual loss, and at the end of ten years this enormous annual loss should be largely, if not wholly, checked. In this connection it should be observed that in 1918 the state spent between \$35,000 and \$50,000 for typhoid control which entailed a loss of less than

half that of malaria. This amount spent for typhoid control resulted in 1918 in a typhoid reduction of twelve per cent. Little or no money was spent by the state in 1918 for malaria control and the malaria death rate for that year went up by about twenty per cent. as compared with the previous year. The several local malaria control campaigns that have been carried on in California, for example at Penryn, Oroville and Los Molinos, particularly the Anderson campaign with state aid where exact records were kept, prove without a doubt that adequately financed and strictly supervised work will bring just as definite and satisfying results as have been obtained in the control of typhoid and other communicable diseases.

DIVISION OF PARASITOLOGY.

By CHARLES A. KOFOID, PhD., ScD., Consulting Parasitologist in Charge.

The war and its after effects have seriously interfered with the work of this Division and determined to a large degree the nature of its work. In the first place the depression in the mining industry, especially in the gold mines of the Mother Lode district, the closing down of two of the largest mines by flooding, and the labor situation in the mines resulting from war conditions, have made it advisable to suspend for the time being the work of this Division in the eradication of hookworm among the miners.

The labor situation was such and the monthly turn-over so great that it was difficult to secure treatment of infected men voluntarily, as they would move on to other employment rather than take the treatment in many cases. The focus of infection established, apparently for many years in some of the gold mines of the state and maintained by new accessions of miners from the South of Europe who may bring the infection with them, constitutes a public health menace to the state at large because many of the men who are infected move about from place to place rather frequently. In 1917-1918 the Division found 288 miners infected, but 80 of these moved on before treatment was given.

Examination of Miners for Hookworm: 1917-1920.

Mines	Total number examined	With hookworm	
		Number	Per cent
Gold	2,123	278	13.1
Copper	441	11	2.5
Quicksilver	127	1	0.8
Borax	41	1	2.4
Tungsten	19		
Tunnel workers	66	5	7.6
Total	2,817	296	10.5

The task of eradication of hookworm still remains to be accomplished. The number of men treated (137 of 278 in 1917-1918) and the percentage of these cured by the single treatment (approximately 50 per cent according to the experience in army camps with one treatment) still leaves a large number of carriers many of whom move from

mine to mine, and, if careless, pollute the mines in which they work. The effective eradication of this infection will require a generally enforced system of examination and certification of miners as free from hookworm, plans for which were in progress when many of the mines shut down because of the war. With the renewal of gold mining on a larger scale it will be opportune to undertake a thoroughgoing attempt to cure all carriers engaged in the mines.

The fact that five (7.6 per cent) of the 66 men examined engaged in the Hetch Hetchy tunnel, three of them not of alien origin, were carriers of hookworm, is indicative of the fact that the infection is carried into labor camps elsewhere than in the mining districts and that the public health problem of hookworm eradication in California extends far beyond the communities' industrial interests, and labor groups of the Mother Lode.

The campaign of education in mine sanitation conducted by the field agent of this Division has resulted in marked improvement in the cooperation of mine superintendents and the men employed in the mine in the suppression of mine pollution and in the improvement of sanitary provisions and in observance of sanitary rules.

With the return of Major Kofoid from army service where he had charge of hookworm eradication in the Southern Department and later was stationed at the army laboratory in New York in charge of examination of returned soldiers from overseas for intestinal parasites, especially protozoan infections, the Division of Parasitology devoted considerable attention to the examination of overseas soldiers in California with especial reference to carriers of amoebic dysentery, which is sometimes a cause of chronic disability.

Men of the Ninety-first division, which saw hard service in the Argonne and in part in Belgium, suffered severely from intestinal disturbances, according to the testimony of many of the men. We have found a high percentage of carriers among these men. In the first 154 examined there were 91 overseas, 34 home service, and 29 undetermined, with 61, 9 and 12 or 67 per cent, 26.5 per cent and 41.4 per cent infected respectively with amoebiasis. There is abundant evidence that carriers of amoebiasis in the civil population have been increased by the return of overseas men. Amoebiasis is prone to spread in the families of infected persons. Accordingly we may expect that this disease will be more prevalent than heretofore in the state.

There is constantly increasing testimony on the part of physicians who are following up obscure cases in which these infections are found, of the clinical importance of infections by *Endamoeba dysenteriae*, *Giardia enterica*, and *Chilomastix davainei*.

This Division has received very substantial (and uncompensated) assistance since August 1919 from Dr. Olive Swezy, research associate of Professor Kofoid on National Research Council grant in 1919. It lost the valuable services of Professor W. W. Cort, called to the chair of Helminthology in the School of Public Health at Johns Hopkins University in 1919. The necessity of retrenchment in the finances of the Board resulted in the sale of our floating laboratory boat used in the Oriental work in the Delta and in loss of the services of Mr. McDonald, our experienced and efficient supervisor of our laboratory in 1919 and in August, 1920, Mr. A. M. Bean, our Field Agent, also

resigned. He had been peculiarly successful in the difficult and oftentimes perplexing duties of Field Agent, especially in the educational work with the men in securing their interest and cooperation in enforcing mine sanitation.

Another source of hookworm infection investigated by this Division comes from Orientals who have brought hookworm and other parasitic infections into the state. In order to test the extent of this introduction the Division conducted a survey of groups of irrigated Delta lands and in other agricultural camps in the central valleys. In 1919 five of nineteen foreign students examined in the University of California were found to be carriers of hookworm infection.

These two sources of hookworm, infected miners and Orientals, constitute a menace to public health and an added reason for rigid enforcement of sanitation in labor camps, especially in all irrigated lands, and call for cooperation of labor, employers, and the State Board in the eradication of the infection.

That these sources of infection are not without widespread consequences appears in the fact that of 612 California soldiers examined by me for hookworm in army camps there were thirteen carriers of hookworm or 2 per cent, distributed in thirteen counties. Some of these cases were clearly imported from hookworm areas but others seem to have had an endemic origin. It is obvious that physicians in California generally might well be on the lookout for the occurrence of this infection where clinical signs suggest it, quite independently of the previous residence of the patient in known hookworm territory.

Tabulation of Laboratory Work for the Biennium.

Examination for intestinal worms:

Hookworm	106
Trichuris orientalis	25
Trichuris	278
Ascaris	42
Clonorchis	11
Strongylus stercus	3
Oxyuris vermicularis	3
Hymenolepis	2
Taenia	24
Oxyuris incognita	84
Total specimens examined	3763

Examination for intestinal protozoa:

Endamoeba dysenteria	500
Giardia	66
Chilomastix	63
Trichomonas	24
Total specimens examined	3098

Grand total 6861

REPORT OF BUREAU OF TUBERCULOSIS.

EDYTHE TATE-THOMPSON, Director.

The Bureau of Tuberculosis has continued, the past two years, to urge the counties of the state to erect sanatoria where the tuberculosis poor can be cared for. Only a few counties are at present without some means for care. These counties are in the coast district, stretching from Mendocino to San Luis Obispo County.

Along with the plan to care for adults has come a demand for a place for children suffering with tuberculosis. Kern County, Santa Barbara County, and Kings and Tulare counties are at present making plans for buildings for children. Alameda County is maintaining a beautiful preventorium at Arroyo.

Surveys have been made by the bureau at San Diego, Watsonville, Santa Cruz, San Jose and Los Angeles. The Director has spent considerable time working with the United States Public Health Service, American Legion and Federal Board for Vocational Training.

Migration has never been such a serious social and economic factor as it is at present. Hundreds of ex-soldiers suffering with tuberculosis have either been sent here or have come seeking health, and yet often are unwilling to do the things necessary to regain their health. This fact coupled with the increasing number of cases among the resident population of the state, who had influenza and later found they had tuberculosis, has kept the bureau combing the state for every available bed. The bureau's staff has ever been mindful of the humanitarian side to the individual, but at the same time continue to be appalled at the economic waste.

San Francisco's new hospital has been subsidized, as has also Weimar, the hospital near Colfax, now being run by the eleven counties in the north, Amador, Colusa, Contra Costa, El Dorado, Placer, Plumas, Sacramento, Sutter, Tuolumne, Yolo and Yuba. Los Angeles County, Kings and Tulare counties and Merced, Stanislaus and Madera counties have all built new buildings and are giving splendid care and treatment.

The standard for the subsidy is the same in both the large and small institutions. Sad comparisons can be made of the excellent care given in hospitals as a result of the subsidy, against the small appropriations and inadequate quarters provided when there is no subsidy or standard to meet. A constant endeavor is also being made by the bureau to lift the standard of the work being done in the clinics.

Working independently and yet in closest cooperation with the bureau is the California Tuberculosis Association and its local associations. Duplication of effort is avoided and help is given by them where the state and county cannot help. Much of the work done in cooperation with the California Tuberculosis Association has been of the greatest benefit to the entire program; the four occupational therapy teachers provided by them for the hospitals, the demonstrations made of their Preventorium at Manor and their traveling motor clinic, used for discovery of early cases, have been of invaluable aid, as have their workers who are always ready to help the bureau's limited staff. In fact, the absence of red tape in connection with the entire program in the state has made much possible.

The next step for control must lie absolutely in prevention. This, the state can and should do by providing in various sections of the state, forest preventoria, particularly for the group of children drawing state and county aid. Many of these children could be restored to health in childhood where delay later means a hospital bed.

California also needs a convalescent colony under state control. No state in the Union has received as much support from the counties nor has any state developed within its borders such comfortable and attractive hospitals. This local work, stimulated by humanitarian spirit and pride, has saved many patients; but the state needs to develop the preventive work as the counties have the hospitalization of their own sick.

EDUCATIONAL LITERATURE.

Every year the bureau has sent thousands of pieces of educational literature to patients and their families. Our placards on migration have covered the eastern states in the places where they were most needed. Lectures with slides, exhibits at county fairs, and newspaper articles have been sent out.

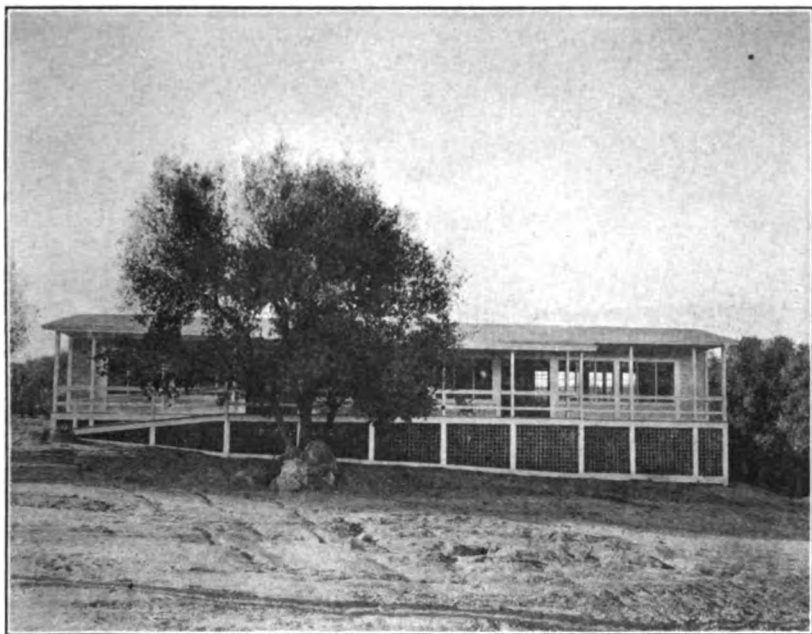
MIGRATION OF THE NON-RESIDENT INDIGENT CONSUMPTIVE.

The Director is a member of the National Migratory Consumptive Committee and has worked to see that the eastern states realize the hardships and injustice of the "passing on" of their indigent tuberculous. The health officers are being notified all over the East to avoid sending patients here unless they are supplied with funds. The Director at the request of the Surgeon General appeared before the Public Buildings and Grounds Committee last spring in an endeavor to secure better care for ex-service men suffering with tuberculosis.

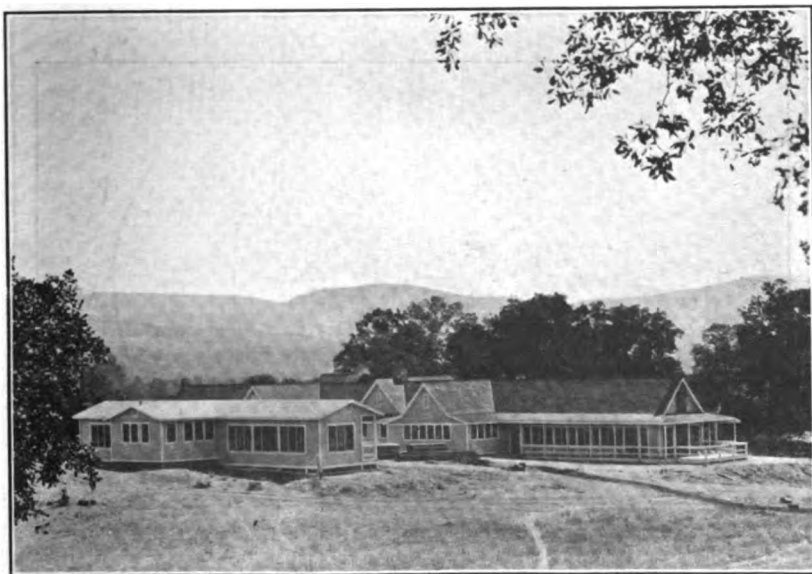
SUBSIDIZED HOSPITALS.

Name of hospital	No. of beds available
Ahwahnee (Merced, Madera and Stanislaus counties) -----	100
Antonio (Santa Barbara County) -----	50
Arroyo (Alameda County) -----	200
San Leandro (Alameda County) -----	60
Fresno -----	75
Los Angeles -----	280
Olive View (Los Angeles County) -----	150
San Bernardino -----	60
San Francisco -----	400
San Joaquin -----	60
Santa Clara -----	100
Shasta -----	16
Springville (Tulare-Kings counties) -----	100
Stony Brook Retreat (Kern County) -----	100
Vauclain Home (San Diego County) -----	50
Weimar (Amador, Colusa, Contra Costa, El Dorado, Placer, Plumas, Sacramento, Sutter, Tuolumne, Yolo and Yuba) -----	200

TYPES OF COUNTY SANATORIA OPERATING UNDER THE SUBSIDY.



Sleeping unit at Madera, Merced and Stanislaus Counties' Sanatorium, Ahwahnee.



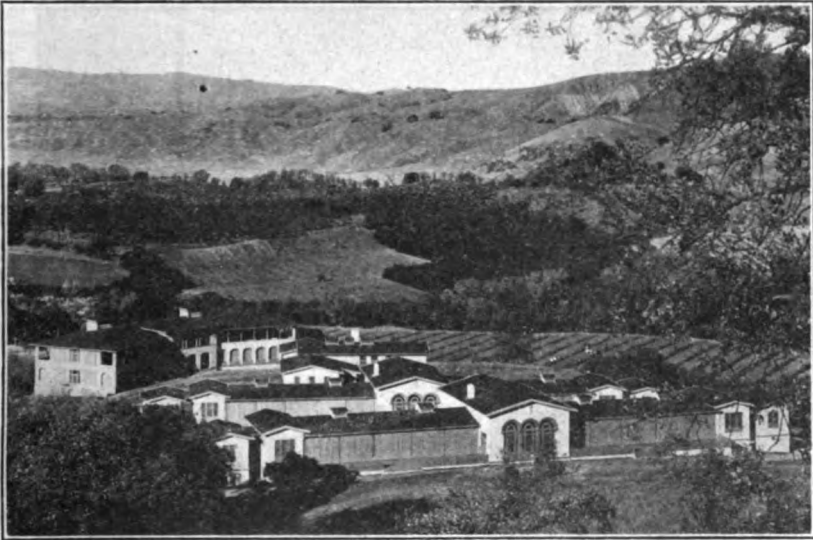
The Madera, Merced and Stanislaus Sanatorium at Ahwahnee, California.



These thoroughbred Holsteins supply the milk used by Ahwahnee Sanatorium.



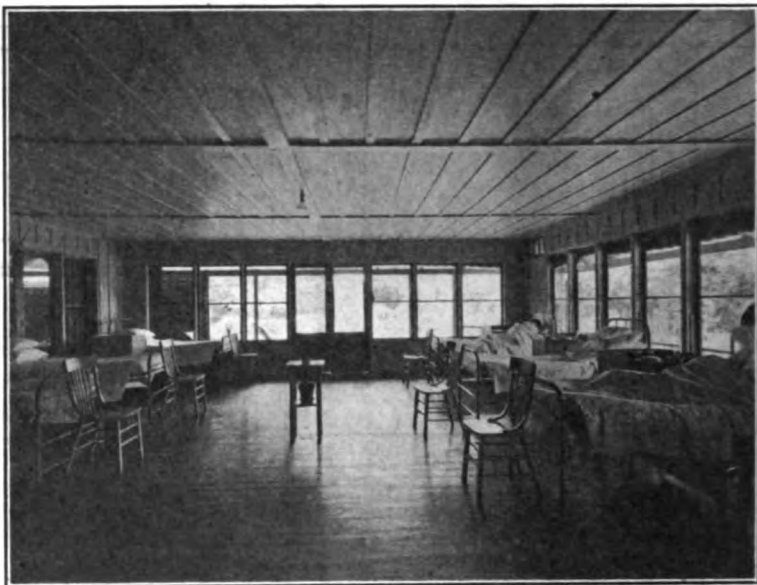
Type of building. Antonio Sanatorium, Santa Barbara, California.



Arroyo Sanatorium. Alameda County Tuberculosis Sanatorium, Livermore.



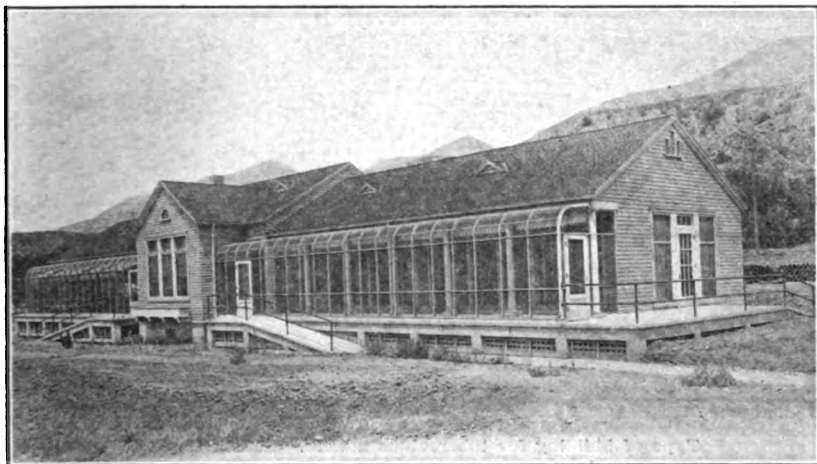
Women's Wards. Arroyo Sanatorium.



Stony Brook Sanatorium, Kern County.



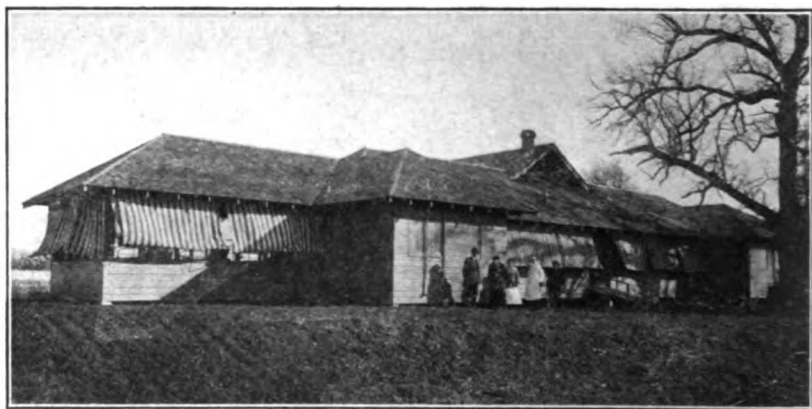
Stony Brook. Kern County Sanatorium, Keene, California.



Sleeping Unit for Ambulatory Patients. Olive View, Los Angeles County.



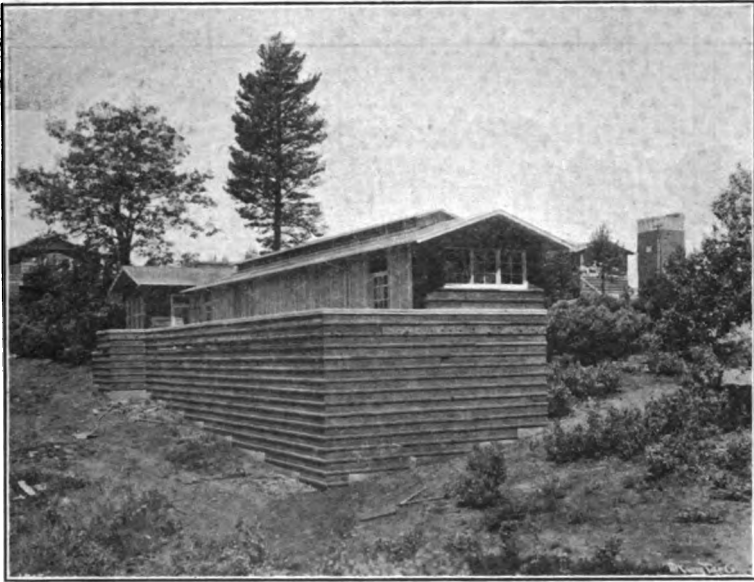
San Francisco Hospital.



Type of building for tuberculous miners. Shasta County.



Vaucrain Home. San Diego County Sanatorium, San Diego.



Sleeping Unit for Ambulatory Patients, Wiemar. Eleven Counties Tuberculosis Hospital.



Sleeping Unit for Women Ambulatory Patients. Wiemar.



Infirmary. Kings-Tulare Sanatorium, Springville.



Exhibit of work done by patients in subsidized hospital at the Federation of Women's Clubs held in Sacramento. Teachers and material furnished by the California Tuberculosis Association. Many of the counties this year are putting in their own workers.

Cross lined sections indicate counties receiving State aid for indigent tuberculous patients.



REPORTED CASES OF TUBERCULOSIS.

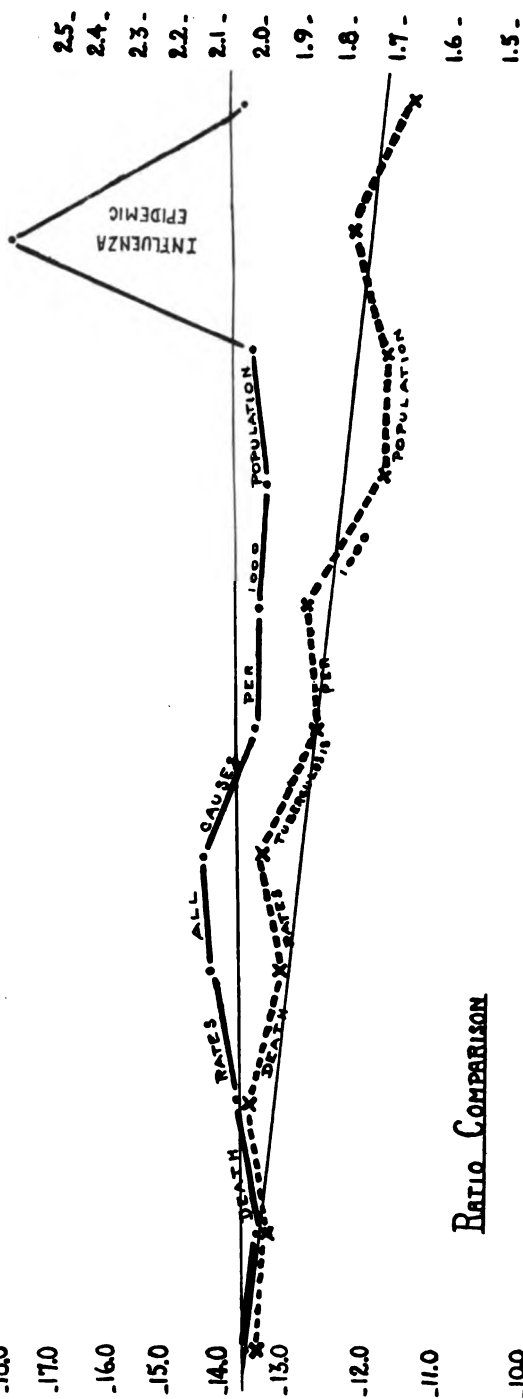
Counties	Years					6 mos. of 1920
	1915	1916	1917	1918	1919	
Alameda	350	464	455	465	317	259
Alpine						
Amador		4	1	10	14	1
Butte	12	31	12	14	16	8
Calaveras	2	7	3	11	6	3
Colusa	4	19		8	7	2
Contra Costa	5	30	8	18	13	11
Dei Norte			3	1	2	
El Dorado				2	5	3
Fresno	36	191	161	58	32	14
Glenn	1	7			5	1
Humboldt	1	17		5	27	35
Imperial	2	10	5	2	29	5
Inyo		1			1	1
Kern	23	88	50	83	68	14
Kings	1	6	4	14	16	12
Lake	1	4		2	6	1
Lassen		1		2	2	
Los Angeles	2,802	3,510	3,359	3,007	3,115	2,282
Madera	16	1	3	1	3	3
Marin	50	22	4	7	16	5
Mariposa	4	1	1		1	3
Mendocino	3	8	3	9	24	2
Merced	21	23	13	15	9	8
Modoc	0	0	8		1	1
Mono						1
Monterey	8	8	5	16	17	5
Napa	33	18	16	43	40	8
Nevada	8	11	5	6	11	4
Orange	11	32	46	33	50	25
Placer	154	173	177	273	264	280
Plumas	2	3	5	5	2	4
Riverside	74	77	53	76	137	100
Sacramento	161	148	190	193	182	67
San Benito	8	6	6	6	6	1
San Bernardino	49	122	98	116	158	70
San Diego	183	91	242	163	163	157
San Francisco	1,630	1,351	1,093	1,358	1,176	857
San Joaquin	144	183	113	95	141	48
San Luis Obispo	3	17	11	21	18	7
San Mateo	7	14	49	92	98	39
Santa Barbara	3	18	29	25	31	47
Santa Clara	49	111	152	130	118	63
Santa Cruz	15	10	5	12	21	21
Shasta	2		1	2	10	4
Sierra	1	1	1			
Siskiyou	5	10	4	3	6	2
Solano	5	106	7	6	9	5
Sonoma	45	47	55	53	42	38
Stanislaus	19	29	7	7	21	13
Sutter		1	3	2	7	3
Tehama	9	5	2	4	3	2
Trinity	3	1			1	1
Tulare	15	14	19	38	81	31
Tuolumne	3			5	7	2
Ventura	10	15	4	2	19	8
Yolo	4	21	3	4	6	6
Yuba	1	6	9	8	4	4
Totals	6,063	7,032	6,404	6,530	6,706	4,617

VARIATION IN DEATH RATES FROM TUBERCULOSIS,
 COMPARED WITH DEATH RATES FROM ALL CAUSES,
 SHOWING STEADY DECREASE IN TUBERCULOSIS .

DEATH
RATE
ALL CAUSES

DEATH
RATE
TUBERCULOSIS

.19.0
 .18.0
 .17.0
 .16.0
 .15.0
 .14.0
 .13.0
 .12.0
 .11.0
 .10.0



Ratio Comparison

1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919

REPORT OF THE BUREAU OF REGISTRATION OF NURSES.

ANNA C. JAMME, R. N., Director.

This period marked an important and active epoch in the bureau owing to war conditions and in consequence the machinery of the bureau was taxed to its greatest capacity to stimulate the production of nurses, the registration of graduates, and to aid the national organizations and the Red Cross in recruiting registered nurses for the Army and the Navy. Following the close of the war the readjustment to more normal conditions had to be met, and the serious condition of the schools at this time was a matter of grave concern. At the close of June 30, 1920, the outlook was more hopeful and the schools were trying to regain their equilibrium.

On July 1, 1918, Miss Kate S. Douglass, R. N., was appointed as Assistant Inspector of Schools of Nursing with headquarters in Los Angeles in the office of the State Board of Health. On August 1, the Director was called by the Surgeon-General to act as one of the inspectors of military hospitals in the United States. Miss Laura Grant, R. N., was appointed Acting Director during the absence of the Director. On October 1, Miss Mary E. Eyre, R. N., was appointed as an Inspector of Schools of Nursing for northern California. On the release of the Director from military duty on March 1, 1919, Miss Mary B. Eyre resigned and on August 1 Miss Laura Grant. This left a personnel consisting of the Director, and Assistant Inspector of Schools of Nursing, two full time stenographers and one part time for the Los Angeles office. The report of the work of the bureau in its various divisions follows:

EXAMINATIONS.

During the biennial period examinations have been held on the third Wednesday and Thursday of February, June and October simultaneously on the same days in Sacramento, San Francisco, and Los Angeles. The following table shows the dates of examinations, the number entered, passed and failed:

Dates	Number entered	Passed	Failed	Percentage of successful applicants
October, 1918	140	108	32	77.14
February, 1919	147	134	13	91.15
June, 1919	158	137	21	86.70
October, 1919	296	272	24	91.89
February, 1920	190	171	19	90.00
June, 1920	196	185	11	94.38
Totals.....	1,127	1,007	120	

The subjects of examination and the arrangement for each day are:

First Day.

- | | |
|---|--|
| <p>a. m.</p> <p>1. Anatomy and Physiology.</p> <p>2. Hygiene, Bacteriology and Communicable Diseases.</p> | <p>p. m.</p> <p>1. Dietetics.</p> <p>2. Nursing in Medical Diseases.</p> <p>3. Materia Medica.</p> |
|---|--|

Second Day.

- | | |
|---|---|
| <p>a. m.</p> <p>1. Pediatrics.</p> <p>2. Ethics of Nursing.</p> | <p>p. m.</p> <p>1. Urinalysis.</p> <p>2. Nursing in Surgical Diseases.</p> <p>3. Obstetrical Nursing.</p> |
|---|---|

REGISTRATION.

From July, 1918, to July, 1920, 1,166 were granted certificates as registered nurse. Of this number 1,007 were issued on examination and 159 without examination, in accordance with section 8 of the law which permits that nurses registered in other states or foreign countries where the law is equal in requirements to the law of California may be registered without examination. Nurses not obtaining this registration are unable to call themselves registered nurses in this state or to use the letters R. N. after their name. The following table shows the complete registration during the biennial period, also the comparison in number between the former biennial period 1916 to 1918:

Years	On examination	Without examination (reciprocity)	Total
July 1, 1916, to July 1, 1918.....	1,082	59	1,091
July 1, 1918, to July 1, 1920.....	1,007	159	1,166

INSPECTION OF SCHOOLS OF NURSING.

The inspection of schools, in accordance with the provisions of the act, is one of the most important functions of administration. Schools have been inspected at least once each year, and more often as necessity arises. During the biennial period 94 inspections have been made. Inspection includes not only the formal round of the hospital buildings and nurses' residences, but visits to surrounding institutions having direct or indirect bearing on the education and training of the nurse in the particular locality such as: universities, normal schools and high schools. A report of each inspection is sent to the office of the Secretary of the Board, one is filed in the San Francisco office of the bureau, one in the Los Angeles office and a copy is sent to the superintendent of the hospital in which the school is located. The points covered in each inspection are:

(1) *Administrative staff of hospital and school.*

Superintendent of hospital, superintendent of nurses, instructor, night superintendent, head nurses, operating room nurse, dietitian.

(2) *Services.*

Bed capacity, number of rooms and wards, daily average number of patients, daily average in medical service, surgical service, obstetrical service, children, contagious, psychopathic.

(3) *Wards and private rooms.*

General order and cleanliness, appearance of beds, bedside tables, floors, screens, etc.

(4) *Utility rooms.*

General order and cleanliness, equipment, condition of plumbing, care of utensils and appliances, sterilization of utensils.

(5) *Linen rooms.*

Linen supply, method of obtaining clean linen, such as requisition plan, disposition of soiled linen, method of caring for linen as in central linen room or floor linen room.

(6) *Diet kitchens.*

General order and cleanliness, equipment, such as: steam tables, refrigerator, utensils, trays, care of soiled dishes, dish towels, garbage cans, disposition of waste.

(7) *Food service.*

Method of distribution from general kitchen, setting and serving trays, general character of food, method of carrying to patient. General supervision of students' work in administering diets.

(8) *Head nurses' office.*

Location, furnishings, facilities for charting. Method of keeping charts and clinical records. Method of receiving doctors' orders, if verbal or written. System of night nurses' orders and reports. General order of medicine closet, labels on bottles and boxes, if clearly written. method of changing labels, segregation of poisonous drugs. Thermometer trays, method used in taking temperatures. Hypodermic trays, method used in giving hypodermics. Catheterizing trays, method of catheterization. Inspection of trays used for other purposes, such as proctoclysis, hypodermoclysis, etc.

(9) *General nursing care.*

General routine of nursing care, morning bath, evening care. Number of students to a given number of patients. Dressings and special treatments, method of conducting and carrying out special treatments.

(10) *Operating room.*

General cleanliness and order, equipment, nurse in charge, staff of students, method of supervision of work, night operations, the night force, whether the day nurses are used for night work, and if so, the arrangement of time of duty to cover the emergency.

(11) *Obstetrical department.*

The birth room, general order and cleanliness, equipment, nurse in charge, students on duty at births, general supervision of their work. The nursery, equipment, dressing table, method of work.

(12) *School.*

Class room, equipment, including charts, skeleton, blackboards, and other equipment, the lighting and ventilating, the method of heating. Demonstration room, equipment, number of beds used for demonstration purposes, utensils, linen, hospital doll, appliances used in nursing

demonstrations, blackboard, gas stove, running water. If equipment is stationary or brought from the wards for each demonstration.

(13) *Laboratories.*

For teaching chemistry and bacteriology. If laboratory for the use of the school only, or if hospital laboratory is used for teaching purposes. Cooking laboratory, equipment, utensils, stoves, gas plates, charts, etc.

(14) *Library.*

Number of reference books, character, method of control, and if easily available by students. Magazines, number and kind, if subscribed for by the hospital. Educational pamphlets, connection with county library system. Location of library, if in separate room.

(15) *Course of instruction.*

Classes, demonstrations, lectures, the number given on each subject; instructors, the content of instruction, method of conducting classes, the attendance, interest of students, textbooks used.

(16) *Practical instruction.*

Probationary period, length of time in each service, method of supervision of practical work.

(17) *Nurses' residence.*

Location, if in hospital or separate building, single or double rooms, dormitories, porches. General order and appearance of rooms and dormitories, linen supply, closet space, etc. Baths, showers, toilets, number of baths for given number of students, general order and cleanliness of bath rooms and toilets. Recreation rooms, reception room, diet kitchen, sewing room, laundry, method of care of the residence, care of students' rooms and corridors.

(18) *Records.*

System used, card or ledger, day book, record of practical work, record of efficiency, grading, method of filing records, etc. Application forms used, prospectus. Tuition, allowance, if uniforms and textbooks are included in the monthly allowance. Vacation, care during illness.

(19) *General control of students.*

Student government, recreational activities, methods of discipline, general morale of the school, appearance of students.

(20) *Summary and recommendations.*

CONDITION OF SCHOOLS OF NURSING DURING BIENNIAL PERIOD.

At the opening of this period July 1, 1918, heavy pressure was being placed upon the schools to admit as many students as capacity would permit in order to increase the number of future graduate nurses to answer the demands of the war department and to release the graduates in the hospital for war service. At this time a vigorous recruiting campaign was in progress projected by the Council of National Defense which greatly augmented the number of students in the schools. This campaign continued until the armistice after which there was a marked decline in the number admitted. The influenza epidemic had a most disastrous effect on the schools. A large number of students were

attacked, many died, and others becoming frightened and discouraged left the schools. Class work was suspended and the regular routine of instruction greatly disturbed. Some schools recovered their equilibrium in a short time while others were months getting back to a normal condition. At the close of the period the number of students, while much less than at the close of the corresponding period, were well caught up in their instruction and the courses were being given more strictly in accordance with the requirements of the board.

CERTIFICATION OF APPLICANTS.

In April, 1918, the State Board of Health established a standard of educational qualification for admission of applicants to schools of nursing. In order to carry out the administration of this ruling it became necessary to issue a qualifying certificate to each applicant. By September 1, 1918, a system was established and the credentials of each applicant were examined in the office of the bureau and a certificate issued.

The pressure brought upon the training schools at this time to graduate students as rapidly as was consistent with the law caused the board to pass a ruling granting credit of from six months to one year for necessary science work taken in an approved school or college previous to entering the school of nursing, such science work to be considered as preparatory to the study of nursing including biology, nutrition and cookery, chemistry, physics, physiology, bacteriology, and hygiene. A number of students were certificated with credit and admitted to advanced standing. When the emergency closed on the termination of the war, the board prepared a new ruling reducing the amount of credit for high school science work to three months and establishing an equivalent for high school graduation, and at the same time the curriculum underwent some reorganization. This ruling which is now in effect is as follows:

A. Applicants over eighteen years of age, who present credentials showing four years' work in a high school, or beyond high school, or from other institutions of secondary grade accredited to a college, or university, may be certified for entrance to schools of nursing.

B. Applicants over eighteen years of age who have not completed four years' high school course, but who present satisfactory credits in English, arithmetic, chemistry, cooking, or in other subjects that may be considered of equivalent value, may be certified for entrance to a school of nursing.

C. Applicants over twenty years of age who can show to the satisfaction of the Bureau of Registration of Nurses a training which, in the opinion of the bureau, is sufficient preparation for entrance to a school of nursing may be certified without further examination.

D. Certification with credit.

High School graduates presenting satisfactory credits in the following subjects may be allowed credit on the general course in a school of nursing not to exceed three months.

Chemistry—

(a) Inorganic.

(b) Organic.

Chemistry of foods and nutrition.

Cooking.

Dietetics.

Biology (when dealing with the lower forms of life and cellular structure).

E. On presentation of satisfactory credits in the following subjects, taken in an accredited institution of higher grade than the high school, credit may be allowed on the general course in a school of nursing, not to exceed twelve months:

Anatomy.

Physiology.

Zoology.

Chemistry.

Bacteriology.

Dietetics.

Biology.

Hygiene.

Physics.

F. On presentation of satisfactory credentials, showing work pursued in another accredited school of nursing, credit will be allowed not to exceed twenty-four months on the general course.

COMBINED FIVE-YEAR COLLEGIATE AND NURSING COURSES.

A combined course consisting of three years of collegiate work and two years in an accredited school of nursing is given by two universities and three colleges in this state as follows:

Universities and Colleges Affiliated with Schools of Nursing.

Stanford University—Stanford School for Nurses.

University of California—University of California Hospital.

Mills College—University of California Hospital, Stanford School for Nurses.

Occidental College—Pasadena Hospital.

College of the Pacific—University of California Hospital, Stanford School for Nurses.

Applicants to any one of the above combined courses must satisfy both the entrance requirements of the university, or college, and the State Board of Health.

ADMISSION TO SCHOOLS OF NURSING.

On July 1, 1919, the number of students enrolled in the 67 accredited schools of the state was 2569; on July 1, 1920, 2283 were enrolled. During the year from July 1, 1919, to July 1, 1920, 1052 educational certifications were issued by the bureau. The following table shows the classification of certifications issued during the period from April, 1919 to November, 1920:

Classification	Number
Combined courses with universities	40
College and high school graduates (certificated with credit)	357
High school graduates (certificated without credit)	266
With some high school or equivalent	956
Transfers from one school to another	216
Total	1,835

PUBLICATIONS.

During this period a smaller number of publications have been issued due to the greatly increased cost of printing and are as follows:

- (1) List of Registered Nurses, 1918-1919.
- (2) Facts about Registration.
- (3) On Nursing. (Practical information for High School Girls.)
- (4) Course of Instruction.
- (5) Special Announcement for Students in Schools of Nursing.
- (6) Outlook in Nursing. (A reprint by M. Adelaide Nutting.)

LIST OF ACCREDITED SCHOOLS.

Hospital with which school is connected	Location
1. Alameda County	San Leandro
2. Alameda Sanitarium	Alameda
3. Alta Bates Sanitarium	Berkeley
4. Angelus	Los Angeles
5. Army School of Nursing	Presidio of San Francisco
6. Burnett Sanitarium	Fresno
7. California	Los Angeles
8. Children's Hospital	Los Angeles
9. Children's Hospital	San Francisco
10. Clara Barton	Los Angeles
11. Dameron	Stockton
12. Enloe	Chico
13. East Bay	Oakland
14. Emanuel	Turlock
15. Fabiola	Oakland
16. Fairmont	San Francisco
17. French	San Francisco
18. Fullerton	Fullerton
19. Franklin	San Francisco
20. Glendale	Glendale
21. Good Samaritan	Los Angeles
22. Hahnemann	San Francisco
23. Loma Linda	Loma Linda
24. Los Angeles County	Los Angeles
25. Mary's Help	San Francisco
26. Mercy	Bakersfield
27. Mater Misericordiae	Sacramento
28. Methodist	Los Angeles
29. Mount Zion	San Francisco
30. O'Connor Sanitarium	San Jose
31. Orange County	Orange
32. Pacific	Los Angeles
33. Paradise Valley Sanitarium	National City
34. Pasadena	Pasadena
35. Pomona Valley	Pomona
36. Providence	Oakland
37. Redlands	Redlands
38. Riverside	Riverside
39. Roosevelt	Berkeley
40. Sacramento County	Sacramento
41. San Antonio	Upland
42. Samuel Merritt	Oakland
43. San Bernardino	San Bernardino
44. San Diego County	San Diego
45. San Francisco County	San Francisco
46. San Joaquin County	French Camp
47. Santa Ana	Santa Ana
48. Santa Barbara Cottage	Santa Barbara
49. Santa Clara County	San Jose
50. Seaside	Long Beach
51. Sequoia	Eureka
52. Sierra	Sonora
53. Stanford University (Lane Hospital)	San Francisco
54. St. Catherine's Hospital	Santa Monica
55. St. Francis Hospital	San Francisco
56. St. Francis Hospital	Santa Barbara
57. St. Helena Sanitarium	Sanitarium
58. St. Joseph's	San Diego
59. St. Joseph's	Stockton
60. St. Mary's	San Francisco
61. St. Luke's	San Francisco
62. St. Vincent's	Los Angeles
63. Union Labor	Eureka
64. University of California	San Francisco
65. White	Sacramento

DEVELOPMENT.

During this biennial period the work of the bureau has increased very materially and it still continues to be the clearing house for all matters having any relation to nursing. Probably the most important step in the development of the work has been the issuance of the qualifying certificate for entrance to schools of nursing. This has brought the bureau and the future student together at the very outset of her course and has given her perhaps a clearer viewpoint of what constitutes a course of instruction and training. A number of schools do not provide a prospectus or any means of information for students, and they, therefore, have no way of ascertaining what they should have in instruction or practice on entering a school. With the course before them, which is contained in a leaflet sent out with each certification, the students are thereby informed and understand what is expected of them and of the school. This has been a particularly difficult period for hospitals and schools and probably the most difficult from the administration standpoint in the history of hospitals and training schools in this country. With the greatly increased cost of all materials, higher wages for hospital employees, increased salaries of officers, and the difficulty of securing employees or officers at any cost has taxed the administration of hospitals to the breaking point. In the schools the decreased number of applicants, owing to economic and industrial conditions, has affected the nursing administration in the hospitals and thrown a tremendous burden on the Superintendent of Nurses to maintain a sufficient force to take care of the sick. Notwithstanding these difficulties the hospitals have been maintained and actually increased their capacity in many instances; none have closed their doors even though operating at a loss.

The establishment of the office in Los Angeles with the assistant inspector in charge has tended to develop the work in this section; the schools coming under the inspection of Miss Douglass are those south of San Luis Obispo and Fresno.

An office was established in San Francisco in May, 1919. The purpose of this was to bring the office nearer to the center of activity as the greater proportion of schools are in the bay district. Here the director is in closer touch with the schools and traveling is greatly reduced.

A post-graduate course in Public Health was established at the University of California in August, 1918, as an outcome of the summer session courses during the two previous years. Although this is not an activity of the bureau, it is, however, a direct development of the stimulus coming from the certification of the nurse and the establishment of a definite machinery for standardizing the education of nurses in this state. This has had its effect on the training of students in preparing them for public health service by a fundamental course upon which may be built this special public health course.

The action of the State Board of Education in carrying out the provisions of an act requiring that a nurse shall be registered in California before she may obtain a health and development certificate to act as a school nurse has also had direct bearing on the development of nursing education giving reason for a more careful preparation for this class of public health work and obliging registration as a qualification.

The nurse registration act under which the bureau is administered does not require that all graduates shall be certificated. Therefore the force outside the law has stimulated registration and aided in establishing the status of nurses graduated from an accredited school of nursing and placed certain obligations upon the school in the matter of instruction of the students who should eventually become useful servants of the state as registered nurses.

REPORT OF THE BUREAU OF SANITARY ENGINEERING.

RALPH HILSCHER, C. E., Director.

The staff of this bureau at the end of the biennium, June 30, 1920, was as follows:

Ralph Hilscher	Director
Clyde F. Smith	Assistant Engineer
R. F. Goudey	Assistant Engineer
E. A. Reinke	Assistant Engineer
W. F. Langelier	Chemist and Bacteriologist
Cornelius Herb	Assistant Bacteriologist
M. Cuddeback	Laboratory Helper
A. M. Tridel	Clerk
C. M. Partsch	Stenographer
Lucy Powers, Southern Branch Los Angeles	Laboratory Technician
G. D. Naquin, Southern Branch, Los Angeles	Stenographer
R. F. Atsatt	Temporary Sanitary Inspector

Mr. C. G. Gillespie was Director of the bureau until December, 1919, when he resigned to become resident engineer of the filtration division of the city of Sacramento. Ralph Hilscher, at that time Southern Division Engineer, stationed in Los Angeles, was made Director, and since then the position of Southern Division Engineer has been vacant. The following members of the bureau staff were on leave of absence while in the Sanitary Corps of the United States Army:

Clyde F. Smith	December 1, 1918 to February 17, 1919
R. F. Goudey	November 6, 1918 to April 10, 1919
Frank Bachmann	September 28, 1918 to January 18, 1919

In June, 1919, Mr. Bachmann resigned as chemist and bacteriologist of the bureau to accept a similar position with the Connecticut State Board of Health. Mr. Goudey assumed charge of the laboratory until February, 1920, when Mr. W. F. Langelier, Assistant Professor of Sanitary Engineering at the University of California, was engaged on part time to supervise the laboratory work, thus releasing Mr. Goudey again for engineering and field work. Mr. Reinke was added to the staff in February, 1920. R. F. Atsatt was employed on resort and camp sanitation work in the south. Cornelius Herb has been promoted from the position of laboratory helper to that of assistant bacteriologist.

APPROPRIATIONS.

The sum of \$45,000 was appropriated for the maintenance of this bureau during the biennium ending June 30, 1919. The appropriation was increased to \$50,000 for the biennium ending June 30, 1921. This increase has not permitted any enlargement of the bureau activities. In fact, the staff is smaller now than it was two years ago and the monthly allowance from the appropriation is barely sufficient to meet current demands for salaries and expenses. Had it not been for a substantial saving resulting from leaves of absence taken by men in the Service, and from discontinuance of the southern branch, the appropriation would have been quite inadequate for continuance of normal activities. The coming year will necessarily be one of curtailed activity because of limited funds and greatly increased cost of operation.

WATER SUPPLIES.

Approximately 320 cities and unincorporated communities in California have public water supplies, serving an aggregate of about 2,700,000 people. About three-fourths of these people are supplied water that is wholly or partly from surface streams, and the remainder with water derived from wells.

Many of the surface supplies and a few well supplies are unsafe for human consumption without purification. This became immediately apparent to the Bureau of Sanitary Engineering at the time of its organization in 1915. Since that time a vast improvement in the general healthfulness of California water supplies has been gradually brought about by inducing various water companies and cities to install purification plants of one kind or another, or by improving the operation of existing plants. At the present time, 75 of our water supplies, serving nearly a million and a half people, are equipped with apparatus for disinfecting the water with chlorine or chloride of lime. Twelve supplies, serving about half a million people, are filtered, and the city of Sacramento within another year expects to have completed a plant to filter its supply.

The work of this bureau in connection with public water supplies, during the biennium, may be summarized as follows:

Inspections and reinspections	189
Reports to communities	62
Permits granted	77
Plans reviewed	4

SEWAGE DISPOSAL.

Approximately 200 cities and unincorporated communities in California have public sewerage systems. About two-thirds of these include treatment works of one or another, as follows:

Works consisting of—	Number of Plants
Septic tanks only	78
Imhoff tanks only	25
Septic tanks and sprinkling filters	2
Imhoff tanks and sprinkling filters	6
Septic tanks and contact beds	2
Imhoff tanks and contact beds	3
Fine screening	3
Coarse screening	1
Activated sludge	1

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At five of these plants the effluent is disinfected with chlorine, one a septic tank effluent, one a fine screen effluent, one a contact bed effluent, one a sprinkling filter effluent and one an activated sludge effluent.

About 65 California cities finally dispose of part or all of the sewage on land. In some cases the sewage is used to advantage for irrigating crops while in other places the land so used is merely a dumping ground. Cities using other than land disposal discharge into tide water and valley streams and water courses.

The work of this bureau in connection with sewerage, during the past biennium, is summarized as follows:

Inspections and reinspections	220
Reports to communities	6
Plans reviewed	26
Permits granted	13
Tests of treatment plants	5
Stream pollution surveys	3

SWIMMING POOLS.

The number of swimming pools is far greater in California than in any other state. Their popularity seems to be ever increasing, as is illustrated by the following tabulation:

Year	Number of pools in California
1890	5
1900	16
1910	54
1920	224

An act passed by the legislature in 1917, gives to the State Board of Health general supervision of the healthfulness, cleanliness and safety of swimming pools. The active work in connection with this supervision was placed with the Bureau of Sanitary Engineering. The subject of swimming pool sanitation is one on which practically no literature or experience is available and the work of the bureau has necessarily been devoted very largely to investigation and research in order that a solid foundation for supervision could be established.

Based on the earlier investigations, a set of rules to regulate design and operation of pools was formulated and adopted by the State Board of Health in August, 1919. These rules have since been the general guide in the construction of new pools and in the remodeling of a number of old pools. A great number of inquiries regarding the subject have been answered by the bureau. Criticisms of the rules have been frequently made and all of these have been carefully considered by the bureau. Many of them have had merit and further study has indicated that the rules should be modified. The preparation of a new set of rules has recently been in progress and will shortly be presented to the board for action.

The bureau has prepared for distribution a bulletin on swimming pools, which includes a copy of the act, a copy of the State Board of Health rules, a general discussion of pool sanitation and an article setting forth the result of the bureau's investigation of methods for laundering bathing suits and towels.

Following is a summary of the bureau's swimming pool work during the biennium:

Inspections and reinspections	78
Special studies of pools	21
Plans reviewed	16
Temporary permits granted	21

MOUNTAIN SANITATION.

With the increased ease of transportation made possible by automobiles and improved roads, the California mountains have come to constitute a recreation area of great importance, visited each year by up-

wards of two million pleasure seekers. As a result of this, the sanitation of resorts, camping places and mountain streams is now a complicated problem. This Bureau since its organization has done a great deal of work in connection with resort water supplies and sewage disposal and the great majority of such places are now reasonably well equipped in this respect.

At the beginning of the 1920 season, an active campaign to reach the individual campers was launched. This, it was considered, would best be done through publicity. Many thousands of placards, appealing to campers and automobile parties to leave their camps as they would like to find them, to help keep the mountains clean, and to avoid contaminating streams, were posted in all parts of the state. A small pamphlet discussing the camp sanitation problem in a general and popular way was distributed in large numbers through the Forest Rangers, travel bureaus, automobile clubs, hotels, etc. Considerable publicity was obtained through newspapers and clubs and much assistance was rendered by the United States Forest Service. A number of counties that had not already done so were induced to enact special legislation regulating sanitation of highways and streams. This bureau at present has in preparation a set of rules regulating sanitary equipment and operation of public camp and picnic grounds.

LABORATORY WORK.

The bureau's main laboratory for water and sewage analysis is located in Berkeley. A branch laboratory is maintained in Los Angeles. Following is a summary of the work done in these two laboratories during the past two years:

<i>Water.</i>	
Bacteriological examinations	7868
Partial chemical analyses	7247
Sanitary chemical analyses	230
Mineral analyses	56
Microscopic examinations	83
<i>Sewage.</i>	
Bacteriological examinations	200
Chemical examinations	41
<i>Trade Wastes.</i>	
Chemical analyses	10
<i>Miscellaneous.</i>	
Mechanical examination of filter sands	8
Examinations of sludge	4
Bacterial examinations, bathing suits and towels	327
Special examinations	2
Total	16,085

REPORT OF THE BUREAU OF FOODS AND DRUGS.

E. J. LEA, M. S., Director.

The report of the Bureau of Foods and Drugs herewith submitted is the seventh biennial report of this Bureau and covers a period from July 1, 1918, to June 30, 1920.

During this biennial period the enforcement of the California Commercial Feeding Stuffs Act, effective November 1, 1919, has been added to the work of this Bureau, which is charged with the enforcement of the California Pure Foods and Drugs Acts; the California Cold Storage Act; the Food Sanitation Act, as well as cooperation with the State Dairy Bureau in the enforcement of certain features of the dairy laws. This Bureau also cooperates with the State Board of Control and State Purchasing Agent in connection with food and drug supplies purchased for state institutions.

During the biennial period 2312 official samples of foods and drugs were collected and analyzed. Of this number 1243 samples were adulterated or mislabeled within the meaning of the California Pure Foods and Drugs Acts. Of the 1243 cases in violation of the foods and drugs acts, 569 were continued by the State Board of Health on account of correction of the violation, and 674 were referred to district attorneys for prosecution. Of the 674 cases referred for prosecution, 503 have been convicted, 78 not prosecuted on account of death, bankruptcy, migration, lack of witnesses, etc., 30 settled out of court on account of violation being corrected or material destroyed, 51 dismissed and 12 cases still pending. The total fines imposed during this period amounted to \$8930. In 110 of the cases convicted the defendants were placed on probation without paying a fine. The fines imposed range from \$5 to \$500, the average being \$22.69.

In the majority of cases the amount of fine is not sufficient to restrain the defendants from further violation of the law. Publicity has a far greater effect in correcting adulteration or mislabeling than convictions and fines in court. It is believed, however, that larger fines in the majority of cases would be of great assistance in enforcing the food and drug laws.

During this biennial period 2,706,826 pounds of decomposed and unfit food were condemned and destroyed. This total includes many different articles of food as appear in detail later in this report. The work for the two years is summarized as follows:

Total samples analyzed, foods, drugs, state institutions, and cold storage	2,160	2,368
Food and drug samples, official, total	1,134	1,178
Cases reported to State Board of Health for action	703	540
Cases continued by State Board of Health on account of correction of violation	298	255
Cases referred to district attorney for prosecution	392	282
Cases convicted by court or jury	281	222
Cases in which fines were imposed by court	215	178
Cases convicted and defendants placed on probation	66	44
Cases dismissed	26	25
Cases not presented on account of death, bankruptcy, migration, lack of witnesses, etc.	58	20
Cases settled out of court on account of violation being corrected or material destroyed	27	3
Interstate cases	13	3
Fines imposed	\$4,025 00	\$4,905 00
Decomposed food destroyed or condemned (pounds)	1,719,801	986,935
Cases pending	12	

The cold storage work at the present time involves the inspection of forty-four cold storage plants. These plants are carefully inspected to determine their fitness for the storage of food, and the products stored therein are examined at frequent intervals to see that they are in proper condition and that no unfit cold storage goods are stored or sold. It may be said that the cold storage plants in this state are in excellent condition, well equipped for preserving food by refrigeration and it is seldom necessary to condemn materials which are found in these plants. The principal item of cold storage goods that requires attention and investigation is eggs, not because the eggs spoil but on account of cold storage eggs being sold as fresh. This, of course, is no fault of the cold storage plant but is due entirely to the illegal practice of wholesale and retail dealers in eggs.

A great many inspections are made, by our six inspectors, of the sanitary conditions in and surrounding establishments where food is manufactured, prepared or sold and it is regrettable that so many places are found which are not in proper condition. We find that in nearly every case insanitary conditions are corrected at the request of the inspectors without resorting to court action, but our small force is entirely inadequate to cover the sanitary inspections of such a large state efficiently. Many of the large cities have their own inspectors who do excellent work in this respect but there is a great need for more extensive work in the line of inspection.

The system of examination of supplies for state institutions, as provided by the State Board of Control some years ago, is still giving excellent results in keeping up the quality of food and other supplies delivered to the institutions. During this biennial period seven hundred twenty-one samples have been examined for the state institutions, and out of this number, ninety-one did not conform to the required specifications. In cases where goods do not conform to specifications, it is the practice to reject the goods or impose a penalty to cover the difference in value. Cases in which dealers deliver inferior or substandard goods, at the present time, are exceedingly rare in comparison with the conditions which existed before this system was put into effect. Among the more frequent or more important violations, the following may be mentioned:

BEVERAGES.

The beverages dispensed in this state at the present time consist largely of carbonated or still drinks made from water, citric or tartaric acid, extracts or flavors, sugar, and in most cases, artificial color. Some of the drinks appearing more recently do contain a small amount of orange juice or other fruit, but by far the greater majority are imitation products. There is no objection, under the Food Act, to these imitation products provided they are labeled so as not to deceive or mislead the purchaser.

Of the one hundred eighty-one samples of soft drinks which were collected and analyzed, one hundred eleven were found to be in violation of the Food Law. No such proportion as this is characteristic of the general market because the inspectors' knowledge enables them to discriminate in collecting samples; however, these

figures do show that the temptation still exists to place false and extravagant statements on labels, and to conceal in small type, appropriate color schemes, such statements as disclose the true nature of the product.

CHOCOLATE AND COCOA.

Chocolate is a product containing not less than 45 per cent of cocoa fat. The presence of this amount of fat renders it impossible to prepare chocolate in a powdered form, therefore, no material appearing in the powdered form is legally entitled to the name "chocolate." Cocoa is chocolate from which a part of the fat has been removed. Cocoa is usually powdered. Cocoa should not be sold as chocolate and a mixture of sugar and cocoa should not be sold as cocoa unless the article is labeled "sweetened cocoa."

CONFECTIONERY.

The confectionery that is produced today is free from mineral adulterants and harmful colors. It is true that some confectionery is made of cheap materials and may not be good for the system if much of it is eaten. The violations in this line of food consist largely of candy which is labeled to indicate that certain fruits are present, when in fact, artificial flavors and colors are used instead. This is also true in many cases of so-called maple candy in which an imitation maple flavor is used instead of maple sugar. In some cases unfit fruit has been used for admixture with sugars, gelatine, etc., and sold as confectionery. Confectionery containing moldy and smutty figs has frequently been found in considerable quantity. Large quantities of fig paste made from moldy, smutty, sour, and wormy figs have been seized at certain cracker manufacturing companies and condemned for human food. Many tons of this material have been diverted to the stock yards to be used as hog food, the loss being sustained by the fruit packing houses that made the paste.

EGGS.

The situation in the egg markets in this state has not been at all satisfactory, especially in the season of high prices. Old, stale, decomposed and storage eggs are frequently substituted for fresh eggs. Cold storage eggs are usually of reasonable quality and no objection whatsoever is raised unless they are sold as fresh eggs. Many cold storage eggs are sufficiently good in quality for table eggs, but they should not be labeled fresh eggs, and should not command the price of fresh eggs.

Sixty-eight samples of bad eggs taken from bakershops indicate the kinds of ethics underlying the merchandising of so-called bakers' eggs. Twenty-one samples of bad cold storage eggs emphasize the possibility for abuse of this useful method of food preservation. Twenty-one samples of frozen, spoiled eggs show disregard for reasonable care in handling this class of food.

EGG SUBSTITUTES.

Seven samples of so-called egg substitutes exemplify pure humbug. These substitutes consist largely of corn starch with a small amount

of dried skim milk, and usually a little yellow coal tar dye to make the product resemble eggs. These so-called egg substitutes have neither the baking qualities or the food value of eggs. The corn starch in these preparations sells as high as \$1.50 per pound. Some states prohibit their manufacture and sale.

CREAM.

The pure food standard for cream requires that it shall contain not less than 18 per cent of milk fat. Notwithstanding this standard, it is not uncommon to find restaurants and hotels serving so-called cream which contains less than 10 per cent of milk fat. In certain cases, ordinary milk has been served for cream.

EXTRACTS.

Twenty-four samples of flavoring extracts were being sold under misrepresentation of their true nature. These samples were mostly adulterated in that they were made from imitation materials and sold as genuine extracts.

FISH—CANNED.

The fish canneries of this state have received considerable attention by our inspectors and large quantities of canned fish have at times been condemned on account of spoilage before canning. Twenty-six samples of canned fish were decomposed before canning, or mislabeled with respect to the variety of the fish.

FRUIT.

Extensive investigations of the dried apple industry were made during the 1919 season. This work was done principally in the Watsonville and Sebastopol districts. The apples in many cases were not sufficiently dried to conform to the standard and, furthermore, the excessive water left in the apples interfered with the keeping quality. Four thousand ninety-nine boxes of fifty pounds each were seized and held for redrying. After these apples were redried and repacked, the loss amounted to three hundred nine boxes, due to the excessive water which evaporated from the apples. In other words, the owners of these apples were seeking to market 15,450 pounds of water illegitimately with their apples.

Canned fruits, as a rule, in this state, have been exceedingly satisfactory. The only objections we have made were in regard to so-called pie fruits which in some cases have been packed from rotten, green or defective material.

JAMS, JELLIES, Etc.

There has been a tendency on the part of a number of jam and jelly makers to make these products from unsound fruit. We have found certain factories buying the left-over refuse from commission houses and other sources and making the product directly into jam. It is quite common for jelly and jam makers to use a large proportion of apple stock with their currant, blackberry, raspberry and other fruit

jams and jellies. There is no objection to this practice if the fruit is sound and the label clearly indicates the composition of the article.

MEATS.

In a few cases slaughter houses and butcher shops have been found with diseased meat for sale. A far more common violation, however, is the use of forbidden preservatives in chopped meat, or so-called hamburger steak.

MILK.

The dairy laws of this state are enforced principally by the State Dairy Bureau which now is operating under the State Department of Agriculture. Of the ninety-six samples of milk collected by this department forty-three were adulterated either on account of having insufficient fat, added water, or the milk was dirty.

NUTS AND NUT MEATS.

Nut meats, an article of considerable commercial importance, are used by bakers, confectioners, and other manufacturers in the preparation of foods. The better grade of nut meats are usually used for fancy confectionery, pastry, etc., while the inferior grades are used in cheap candy and certain bakery products. It is not uncommon to find a large quantity of nut meats which are wormy or rancid. Twenty-two of the twenty-five samples of nut meats collected by inspectors were adulterated principally on account of being rancid, in some cases they were wormy also.

PASTES, ALIMENTARY.

The principal article under this heading, which has been found in violation of the law, is egg noodles. The term noodles, or egg noodles, in order to conform to the Pure Food Standards should contain not less than five per cent of solids of whole egg, which will correspond to about twenty per cent of the liquid eggs as broken from the shell. If the noodles contain no egg, or a lesser amount than required above, they should be labeled plain noodles or water noodles. Fifty samples of paste, labeled noodles, were collected and analyzed and found even to contain no egg or a lesser amount than required.

SPICES.

Very little adulteration is found at the present time in spices. The practice of using roasted flour and ground up cocoanut shells, which formerly constituted about one-half of the bulk of spices, has been practically discontinued. The few adulterations which have been noted in spices consist of the use of inferior grades of spice for better grades.

SYRUP—TABLE AND FOUNTAIN.

The table syrups found on the market today are, as a rule, properly labeled, and no objection is made to quality. The violations noted consist of substitution of cheaper syrups for more expensive. This is especially true of syrups labeled to indicate that they are maple, or con-

tain considerable maple, when in fact they contain very little maple, if any. Some of the prominent brands of syrup which are labeled as cane and maple, contain only 20 per cent, or even less, of maple syrup. The adulterations noted in fountain syrups consist largely in the substitution of imitation products for genuine.

TOMATOES AND TOMATO PRODUCTS.

The tomato products manufactured in this state in the seasons of 1919 and 1920 show a very remarkable improvement over the products prepared in previous years. For several years prior to 1919 this department detected tomato products, made from rotten tomatoes, in from twenty-five to thirty canneries each year and a total of over one million cans per year were condemned. During the season of 1919 an earnest effort was made to cooperate with the canners in order to eliminate the rotten tomatoes from the packs of puree, paste and catsup. The state was divided into six different districts, and the canners of each district organized and very heartily cooperated with this bureau. The canners agreed among themselves to reject any and all rotten tomatoes which were delivered to their canneries. A tentative standard was made for tomatoes which might be slightly defective but still capable of economical trimming. It was further agreed by the canners that if one canner rejected one load of tomatoes no other canner would accept that load. A system of checking was inaugurated to carry out this feature of the agreement.

The results from this season were indeed surprising and far better than was expected. Instead of having a "mold count" of 60, 70 or 80, which was common formerly, there was no district which had an average "mold count" of more than 31, and most of the six districts averaged under 25. Only one cannery in the state in 1919 was found in which tomato products had been made out of rotten tomatoes. The same system of cooperation prevailed in 1920 with results that were comparable to the previous year although three canneries were located in which tomato paste was manufactured which did not conform to the standard.

FEEDING STUFFS.

The California Commercial Feeding Stuffs Act was passed at the 1919 session of the Legislature and became effective November 1, 1919. This law provides that all commercial feeding stuffs, which term includes all mixed feeds and ground feeds that are not made from whole grain, shall be tagged or labeled with the net weight, name or brand, name and address of manufacturer, the minimum per cent of crude protein and fat; the maximum per cent of crude fiber and ash; the specific name of each ingredient used in their manufacture, and the per cent of such ingredients as corncobs, corn bran, oat hulls, barley hulls, rice hulls, ground light rice, alfalfa meal, or similar materials, when such constitute a portion of the package, lot or parcel.

The feed manufacturers of this state have cooperated with this Bureau in a highly satisfactory manner in the enforcement of this act. In nearly all cases, the tags have been found reasonably correct and in proper form. In certain cases, however, attention has been called to omissions or incorrect statements on labels, but these defects have been

quickly remedied. Of the eighty samples of feeds collected and analyzed, nineteen were found in violation of the act. These nineteen samples consisted chiefly of rice products. In some cases over 50 per cent of ground lime stone was included in the article sold as rice bran. Excessive rice hulls were responsible for many of the other cases where adulteration was detected.

DRUGS.

The inspection and examination of drugs indicates that there is comparatively little adulteration or mislabeling in this line. The violations can be mostly classified as drugs below the standard stated in the United States Pharmacopoeia, or drugs which bear exaggerated statements with regard to therapeutic qualities. Most of the flagrant misrepresentations on drug labels have disappeared, but individual manufacturers do spring up occasionally who either through ignorance or purposely, place false and fraudulent labels on their goods.

The recent high price of camphor is probably responsible for the forty samples of camphor compounds found below standard. A similar condition in the citric acid market may explain the forty samples of citrate of magnesia found below standard.

Unofficial samples are not included in the above remarks. They represent material sent along with written complaints or obtained by inspectors for purposes of information before undertaking more extensive efforts in a more strictly legal manner.

BIENNIAL REPORT OF THE BUREAU OF SOCIAL HYGIENE.

W. M. DICKIE, M. D., Director.

The Bureau of Social Hygiene of the State Board of Health was established August 13, 1917, as a war emergency, to cooperate with the Army and Navy in reducing the spread of venereal disease in the men stationed in California and to prevent these diseases in the civil population of the state. Military efficiency demanded healthy men and the records of our draft army later showed appalling conditions in the individual communities throughout the country and immediately revealed the necessity of enlarging our program and extending the work as rapidly as possible throughout the whole state.

The original functions of the Bureau were outlined as follows:

1. To secure the reporting by physicians of cases of syphilis and gonococcus infection, together with the probable sources of infection.
2. To discover foci of infection and to isolate infectious persons, whenever necessary, to prevent the spread of venereal disease.
3. To secure the cooperation of cities and counties in caring for men and women isolated on account of venereal disease in public isolation hospitals until no longer infectious.
4. As far as possible to secure the medical examination for venereal disease in male and female prisoners and other persons.
5. To focus on this subject the social forces necessary to give the foregoing individuals an opportunity to enter into productive occupations under conditions fair to themselves and to the communities.
6. To provide the necessary facilities for diagnosis and treatment.
7. To issue printed pamphlets, cards, placards, exhibition of films and presentation of lectures to appropriate groups.
8. To cooperate with the Army and Navy, the United States Public Health Service and all states and local agencies directly or indirectly interested in conditions or causes which lend to the spread of venereal disease.

In order to carry out this extensive program it became necessary to divide the Bureau into three divisions, namely: Medical, Social Service and Educational.

MEDICAL.

- The work of the Bureau was handicapped in the beginning because there were almost no facilities with which to work, so it was necessary to immediately provide increased hospital and dispensary facilities. Many county and other hospitals which had not, up to this time, admitted venereal cases were prevailed upon to admit them the same as those suffering from other diseases. Isolation hospitals were established for the purpose of caring for that group who come through the police courts, most of whom are charged with vagrancy involving moral turpitude. Special hospitals were established in the four largest centers of population in the state, and a number of other communities; facilities in our county hospitals were provided for the isolation and treatment of this class of cases. In communities where provision for isolation was made, it is now the custom to have all men and women arrested on charges involving moral turpitude examined on the following morning, and, if found infected, these cases are quarantined under the State Quarantine Act, and sent by the local health officer to one

of these institutions and treated until such time as in his judgment they are noninfectious. Since 1917, 4,448 cases have been quarantined and treated for an average of five weeks. In some parts of the state men have been isolated and treated, just the same as women, although there have been no additional facilities provided outside of the jails.

The next step was the establishment of clinics throughout the state, which would provide free medical treatment for the large group of persons who were infected and who would otherwise be deprived of adequate treatment. Ten free clinics have been established in the various communities, while five others have been enlarged through state and federal aid, and special clinics have been established for children. In connection with each clinic, there has been provided a social worker, whose duty it is to see that patients do not lapse in their treatments; to discover foci of infection and through social service work bring in those suspected of being infected. The social service workers alone have brought in 1926 cases and returned for treatment 2350 cases during the last fiscal year. The Bureau has also furnished to date, free, to the various hospitals and clinics 22,285 ampoules of salvarsan for treatment of indigent cases. The number of treatments given during the year just ended was 77,180.

Rules and regulations have been passed by the State Board of Health under which these patients, as well as private patients, are required to take the necessary amount of treatment.

Physicians and health officers are required to report each case by number to the State Board of Health and to furnish the name and address of a patient if he or she discontinues treatment. This information is furnished the Health Officer, who is held responsible for the control of the individual so reported.

SOCIAL SERVICE.

Two years ago a Social Service Department was established, under the direction of Elizabeth E. McManus, which now consists of a Social Service Director, four field workers, and a social service worker connected with each clinic. One of the contributions made by the Social Service Department has been the education of the public, through the various organizations of the community, to the fact that a large percentage of the cases have been innocently contracted, and therefore the fact that one is infected with venereal disease does not necessarily imply immorality.

The social workers attached to the various clinics have held to this idea and have considered the infected persons coming under their care as patients, rather than as offenders against the law. This has had the effect of building up the number of voluntary treatments, and where originally it was difficult to find any one who visited a clinic without persuasion, now the number voluntarily seeking treatment steadily grows. This holds true not only of the clinics, but private physicians as well testify to the increased number of treatments where social workers are active in the community. The social worker cooperates with all social agencies, such as health departments, courts probation departments, police departments, hospitals and other agencies which may contribute to the number of cases, and acts as a clearing house in the community.

In this connection an interesting piece of work which is being developed in the state is in connection with the psychopathic cases. Through the cooperation of the psychopathic court and the various insane asylums, the relatives of persons suffering from mental diseases, due to syphilis, committed to these institutions are reported to the Bureau of Social Hygiene, and visited by a social worker, who endeavors to see to it that all infected members of the family are placed under treatment. By this means a large number of people who otherwise probably would be unable to receive any treatment are taken care of. It is also our desire, as quickly as possible, to extend this follow-up work to the families of all infected cases admitted to other state institutions.

The social worker seeks to discover persons in the community who need medical attention, either making arrangements for their treatment at the clinic, if unable to pay the physician's fee, or suggesting treatment by private physicians, if the patient is able to pay. She reports once a month to the Bureau of Social Hygiene on all cases brought in by her, and also must report all cases discontinuing treatment without the permission of the physician.

The duties, primarily, of a social worker connected with a venereal disease clinic, are:

First—To discover cases in the community requiring treatment, and to place such cases under treatment.

Second—To see that cases continue treatment until dismissed by the physician.

Third—To make every effort to change conditions, through cooperation with all available agencies, to remove the cause of infection; this through education, assisting in finding employment for young women in need of such; establishing better detention facilities through hospital care, and all other such work as will tend toward the decrease of problems leading to infection.

EDUCATION.

The Social Service Department has assisted in educating the community to the need and the care and protection of its juveniles and the rehabilitation of its offenders.

During the biennial period ending June 30, 1920, 218 lectures were given before 42,000 persons. These lectures were given by the members of the Bureau and specially qualified volunteer lecturers in the various communities. These lectures are in many instances arranged for by the local worker and in one instance our social worker has talked before practically all the organizations of the community. Through our local representatives in the various communities, we are able to keep up a very effective continuous campaign of education. During the past two years 200,000 pieces of literature have been distributed by the Bureau; while no less than 487,000 persons have seen the Bureau's charts and lantern slides and more than 50,000 witnessed our picture films on Social Hygiene.

Special courses of lectures on Social Hygiene have been given to the student nurses in the various training schools.

Such, briefly, is the summary of the educational work of the Bureau. The daily mail, bringing in its many requests for information and literature, indicates that the word "passed" from old patients to the newly infected persons is manifold. The indirect results of the educational work we have no way to determine, but the continued interest of the general public in the work indicates that information on venereal diseases and their control is earnestly desired, and we know that we are providing a service, not only to the infected individuals, but one which will redound to the welfare of future generations.

Report of California Venereal Clinics Subsidized with State and Federal Funds by the Bureau of Social Hygiene.—
From July, 1919, to and including June, 1920.

Month	New cases		Average daily attention	Total treatment includ- ing Araph.	Number doses Araph.	New cases brought in by social worker			Cases located and returned for treatment	Cases located and not returned for treatment	Cases not located
	Syphills	Gonorrhea				Men	Women	Chil- dren			
San Diego clinic	104	90	9.2	1,745	1,271	55	76	16	9	3	0
San Bernardino clinic	56	40	10.45	991	308	6	14	2	19	25	13
Los Angeles Health Department clinic	472	675	117.1	13,596	1,391	200	464	84	760	183	231
Boyle Avenue dispensary, Los Angeles	281	116	24.9	5,955	1,378	38	69	40	153	112	104
Graves dispensary, Los Angeles, University of Calif.	250	200	22.5	3,899	714	*	*	*			
Pasadena dispensary	61	15	6.3	1,037	291	10	18	7	14	25	5
Cottage Hospital dispensary, Santa Barbara	62	15	2.6	817	161	23	23	19	4	5	3
Good Cheer Club, San Jose	157	19	16.8	3,998	772	46	51	69	68	112	18
Fresno City clinic	54	78	6.6	1,145	166	66	53	1	166	5	
Stockton City clinic	98	108	15.0	2,669	388	76	61	3	13	11	25
Sacramento Health Department clinic	38	41	1.0	114	37	2	5	3	16	27	5
San Francisco Health Department clinic	380	248	45.6	8,544	2,219	4	17	3	88	116	137
Stanford University clinic, San Francisco	457	228	137.0	12,467	2,725	7	18	36	410	226	105
University of California clinic, San Francisco	273	52	37.3	11,239	1,458	4	19	13	290	167	69
Alameda County Health Center No. 1, 3106 Grove, Oakland	97	145	24.6	2,630	162		75	9	100	24	3
Riverside clinic	10	7	1.3	174	36	4	6	6	6	3	5
Totals	2,870	2,115	35.7	76,210	13,835	546	971	310	1,960	1,069	742

*No social worker

REPORT OF THE STATE BOARD OF HEALTH.

Arsenobenzol Report from August, 1917, to and including July 1, 1920.

Total cost of arsenobenzol.....		\$19,609 91
Total number of ampoules arsenobenzol purchased.....		22,314
Total number of ampoules arsenobenzol distributed.....	22,301	
Total number of ampoules arsenobenzol on hand.....	13	
		22,314

Arsenobenzol Distributed.

	Ampa.	Average cost at 88 cents
San Francisco Health Department.....	3478	\$3080 64
Los Angeles Health Department.....	3347	2945 36
Los Angeles County Hospital.....	2070	1821 60
Stanford University Clinic.....	1473	1296 24
San Francisco Hospital.....	1439	1266 32
Boyle Avenue Dispensary.....	1002	881 76
Kern County Hospital.....	894	786 72
Selwyn Emmett Graves Dispensary.....	889	782 32
University of California Hospital.....	888	781 44
Good Cheer Club Clinic.....	821	722 48
Fresno County Hospital.....	637	560 56
Mission Valley Hospital.....	635	558 80
San Diego Venereal Clinic.....	594	522 72
Stockton City Clinic.....	514	452 32
San Bernardino County Clinic.....	410	360 80
Pasadena Dispensary.....	331	291 28
Sacramento Health Officer.....	300	264 00
Santa Barbara Cottage Hospital.....	246	216 48
Fresno City Clinic.....	211	185 68
San Francisco Polyclinic.....	185	162 80
Alameda County Public Health Center.....	164	144 32
Riverside Clinic.....	36	31 68
Miscellaneous.....	1737	1528 56
	22,301	\$19,624 88

Report of Pamphlets Distributed by the Bureau of Social Hygiene, from June 30, 1918, to June 30, 1920.

Pamphlets distributed in response to direct requests.....	197,528
Number of persons addressed by lecture.....	42,136
Number of lectures.....	218
Number of showings of charts and slides.....	176
Number of persons witnessing showings of charts and slides*.....	487,636
Films: Number of showings (not commercial).....	120
Number of persons witnessing showings.....	50,121
Films: Commercial.....	4,000
Manuals of treatment of venereal disease sent to physicians.....	3,000
Posters and placards in English or Spanish, giving venereal disease facts and advising where free treatment may be obtained.....	4,786

*NOTE.—Ten thousand of this number were high school boys.

REPORT OF THE BUREAU OF CHILD HYGIENE.

ETHEL M. WATTERS, M. D., Director.

A report of the Bureau of Child Hygiene at this time must, of necessity, deal largely with future plans, for six and one-half months form too short a period to more than introduce the bureau to the various communities. It has been decided to limit the initial activities to those phases of child welfare dealing with the infant and the child of the pre-school age.

The Children's Year Committee willed to the bureau their complete files, their advice, their plans for the future and the good will which they had engendered in the rural communities. Everywhere the women's clubs had become interested and even the most remote parts of the state were talking about a public health nurse, how to finance a child welfare program and what steps to take first to form a health center; thus, the bureau found that the way was paved.

The larger cities are well equipped to solve their own problems and therefore efforts have been made to assist rural communities and small towns. Personal contact with individuals who are trained through service to the community or through educational courses has been the most successful method of initiating any phase of this work. The rural child of the pre-school age has not had the advantages which fall, naturally, to the urban child, if his mother is interested in his welfare. There are no conferences where his personal hygiene, his diet, his teeth or his defects may be discussed with his mother. There are few lectures which his mother may attend in order to stimulate her interest in his welfare. Therefore, the members of the bureau have spent most of their time in journeying to rural places where mothers or teachers or nurses are requesting their services, either for talks about child welfare, or the newer methods of health education, or where conferences are to be held.

These conferences are more productive of lasting good where there are public health nurses who make the preliminary plans, choosing the place, the equipment, the volunteers and giving publicity to all the details. During the conference the local nurse becomes acquainted with the strangers who attend and afterwards she takes the completed records in order to follow up the children who have remediable defects. Busy physicians who are unable to give all of their time to the conference show their cooperation by short visits.

The response to the work in rural districts has been very gratifying. Mothers seem anxious to bring their children for examination and advice and, furthermore, a large percentage of the mothers follow the advice. Arrangements are made, at each conference, to weigh and measure the children and then to have the physical examinations in the presence of the nurse, the physician and the members of the family, only, so that there is no opportunity for the neighbors to find out the defects of the children.

Oral hygiene is a neglected factor in the life of the ordinary child. The relation of the diet to the formation of the teeth, the care of the first permanent molar, which most mothers believe to be a temporary tooth, the regular use of a small clean toothbrush and the value of a



Activities of Bureau of Child Hygiene. Counties in black indicate those in which conferences have been conducted.

good dental occlusion are interesting facts to mothers, which are often startlingly new.

No one could ask for more undivided attention than that which was paid to the dental hygienist who accompanied the members of the bureau to Trinity and Shasta counties, giving talks to groups of children, telling them how to brush their teeth and why. She also gave prophylactic treatments to the children who watched her place her folding equipment together and listened to the admonitions about chewing food. A dental hygienist added to the staff of the bureau would be a valuable assistant, for the mothers of wee babies need advice about the care of their unerupted teeth so that these teeth may be preserved.

The home demonstration agents of the Farm Bureaus are doing heroic work in arousing the enthusiasm of women for varied diets. Too many times malnutrition has been found among the families whose budget for marketing was large, but whose judgment as to values was wrong. When mothers tell that their three year old children have rice, macaroni, potato and bread for a meal without a thought of the need for fruit, vegetables or dairy products, it is time for dietitians to enter the teaching field.

Correctable defects, such as flat feet, diseased enlarged tonsils or adenoids, or carious teeth are the subjects of conversation after a conference. Inasmuch as the attendance at a conference is voluntary, parents come to talk about the growth of individual members of their families and what measures can be taken to correct habits or deformities which have made their appearances, etc. Therefore, hours are spent discussing diet, exercise, sleep, recreation, fresh air and sunlight in relation to child welfare. Children who need the care of a physician are referred to the family doctor, for no remedies, however simple, are applied at a conference.

There has been a tendency in the state to hold baby contests, giving prizes for the best babies. This has caused so much ill feeling and unnecessary hurt that the educational work attempted has failed, primarily, through the parental rivalry created.

In many localities the conferences have become permanent and are held at varying intervals—some once a week, some every two weeks, others once a month and still others every three months, depending largely upon the size of the population and the enthusiasm of the people.

The public health nurse is the nucleus around which the growth of the child welfare work in this state must take place. She must have the support of the women's organizations, the cooperation of the local health authorities and the physicians, she must be made to feel that bedside nursing is not to be her work, even secondarily, unless she is teaching individuals how to care for the sick. Her task is educational, and when her time is divided between school work and bedside nursing she can not be expected to plan for baby conferences, hold mother-craft classes or give prenatal care to prospective mothers.

The pamphlets which were printed, originally, by the Children's Year Committee were so attractive and so popular that it was deemed unnecessary to supplement them this year by adding others. The most popular one is "Clothes for California Children"; hundreds of times

it emphasizes what is said at a conference concerning the clothes of the youngsters and the care of their feet.

The federal Children's Bureau has furnished this bureau with a supply of their pamphlets and has allowed us the use of the frank in distributing their literature. This courtesy is much appreciated for the appropriation of this bureau would not permit of an expenditure for such exhaustive treatises as the Prenatal Care, Infant Care and Child Care pamphlets, which are printed by the federal department.

The bureau is indebted to many individuals for aid and suggestions. Some of the children of the high schools have made posters announcing the conferences and local artists have made beautiful cards telling of the work. Volunteer assistance is seldom lacking and everywhere a growing interest is manifested.

Certain phases of child welfare are more neglected than others and in some rural communities the nurse is so busy with school inspection that she has no time to study prenatal care, neonatal conditions or infant hygiene. It will be part of the plan of the bureau to stimulate the formation of classes for prospective mothers and to encourage birth registration in order that California may remain in the birth registration area of the United States Bureau of Census.

The program of the future will depend upon the reception of the work done during the first two years. As the staff of the bureau grows more activities can be entered into and more communities can be reached at the same time. There is a tendency to hold conferences at county fairs, and these fairs are often held during the autumn—e. g., the two members of the bureau have often been requested to be in Eureka, in San Joaquin and in San Diego on the same dates.

Although the bureau has only been organized since the latter part of December, 1919, 1420 children have been examined at various conferences throughout the state, and fifty-two addresses have been delivered to various organizations, including parents-teachers' clubs, women's clubs, etc.

REPORT OF THE BUREAU OF VITAL STATISTICS.

L. E. Ross, State Registrar.

The complete analysis of vital statistics for the calendar years 1918 and 1919 is not presented in this report. Limitations laid down as to the expense of publication have precluded the inclusion of the more detailed tables, and figures here presented are principally for the purpose of giving totals only. Complete analysis has been made, however, and is on file in the office of the bureau. Detailed information will be furnished upon application.

In using rates shown in these tables, it must be remembered that they are based upon estimated populations. These estimates are made by the so-called arithmetical method adopted by the United States Census Bureau, and assumes the same numerical change in the population for the post-censal years as occurred during the previous intercensal period. This is fairly satisfactory for the first two or three years after the decennial census is taken, as populations are not ordinarily subject to sudden fluctuations, and the error is not so apparent; but as time goes on the error becomes larger, until for such years as 1918 and 1919 the population estimates are apt to contain errors that materially affect rates based upon them. There is at this time no satisfactory method, aside from enumeration, for determining population, although it is believed that the working out of such a method is far from impossible, and it is hoped that available factors which are known to indicate population will have been combined to form such a method before the next biennial period has elapsed.

The California law requires that cities having a population of 5000 at the last federal census shall be carried as separate registration districts. The analysis has been presented separately for these cities, but they have been tabulated under the counties in which they are located. The figures given for the county are exclusive of such cities. To get figures for the county as a whole, the figures given for such county must be added to those given for the cities.

With reference to the calculation of rates in vital statistics as here presented, it is realized that the "crude" or general rate is of but little use as an indication of conditions. It is hoped that in the near future the use of such crude rates can be largely abandoned in favor of the more useful "specific" rates. For example, a low birth rate in one locality may not mean failure to register births; it may mean a relatively small number of married women of child-bearing age in the population. Again, it is obviously wrong to base birth rates on population as a whole, including both children and the aged. Birth rates should be expressed in terms of married women of child-bearing age. In regard to death rates, it is known that children between 4 and 14 years of age are less apt to die than either younger or older persons. The age composition of the population has a very material effect on the death rate, and death rate should be expressed by age groups. There are other factors to be taken into consideration also.

Desirable as it may be to express birth, death and marriage rates in a single figure, such practice often serves to becloud the issue and give erroneous information. At the present time, however, there is not

sufficient information available with reference to the composition and characteristics of the population to serve as a basis for the calculation of specific rates that would be of service. The forthcoming census will furnish a basis for the beginning of such work, and it is hoped that progress can be made in this direction in the near future.

Births.

During 1918 special effort was put forth, not only by this department but by the federal government, to improve birth registration, with the result that the rate rose from 17.2 per 1000 estimated population in 1917 to 18.0 in 1918. During 1919, however, these efforts were necessarily relaxed, and the birth rate fell to 17.5 per 1000 estimated population. It is felt that the population of California contains no features that justify so low a birth rate. The actual birth rate in this state is probably between 20 and 24 per 1000 population, and it is believed the discrepancy between this and the rate indicated by births registered is caused by failure to register. Some inquiry has been made into the causes for such failure. Negligence and indifference on the part of physicians and midwives and ignorance of requirements on the part of parents are the principal causes. To procure complete registration it is necessary that first, the law be rigidly enforced, and second, a campaign of education among the people be not only initiated but maintained. With reference to law enforcement, it is sincerely felt that an error was made in requiring birth certificates to be filed within 36 hours. This time is too short, and public opinion is not behind it sufficiently to allow of its enforcement. Few physicians are able to comply with this provision, even where an earnest desire to do so is present, without great inconvenience and oftentimes expense. If the period were made three days instead of 36 hours, the law could be enforced and better results secured.

During 1919 the United States Census Bureau conducted a check to determine the completeness of birth registration in California, with the result that this state was admitted to the birth registration area of the United States, having reached the standard laid down by the government for recognition as a registration state. Besides California, there are 23 other states that have attained the standard and have been admitted as registration states.

Deaths.

By reason of the epidemic of influenza in 1918, the death rate for that year (18.5 per 1000 estimated population) is the highest in the history of the state, exceeding the indicated birth rate for the first time since 1910. During 1919 the rate dropped to 14.2. This is still rather high, considering the rates for previous normal years, although it is practically the same as for the United States Registration Area as a whole. The registration of deaths is practically complete, due to the requirement for securing burial permit before interment. No burial permit may be issued until proper death certificate has been filed.

The effect of the influenza epidemic is readily apparent from an inspection of the table giving the median age at death for the state. In 1917 the average Californian died at the age of 52 years. In 1918 this dropped to 40.6 years, showing clearly the ravages of influenza

among the young. In 1919 the median age at death was 48.9 years. The average length of life in the United States is said to be in the neighborhood of 36 years. It appears that Californians live considerably longer than this. The more advanced age may be due to the age composition of the population, brought about largely by migration of people of middle age to this state. It is undoubtedly true that the average age in California is greater than in many other states. Indications are that to a large extent immigrants to California are persons in the older age groups.

Infant Mortality.

That the influenza did not spare the infants is indicated by the 1918 infant mortality rate of 83 deaths under one year per 1000 live births. This is the highest since 1914. For 1919 the rate was the lowest in the history of the state, being 70 infant deaths per 1000 live births. California may justly be proud of this record, which compares favorably with any state in the union.

In considering infant mortality rates it must be kept in mind that the basis of the rate is the number of live births registered. Where registration is incomplete it results in raising the infant mortality rate. For example, thirteen years ago the indicated infant mortality was 160, but due to incomplete registration of births, accompanied by fairly complete registration of deaths, this figure is undoubtedly much higher than the facts justify. In like manner the 1919 rate of 70 is slightly higher than it would be if all births were registered, but the discrepancy is not so great as in the early years of registration. In the birth registration test above mentioned, it was found that slightly over 90 per cent of the births were being registered.

Marriages.

During 1918 the marriage rate decreased, being probably the natural result of the war, following the remarkable increase noted in 1917. During 1919, however, the increase was even more remarkable than in 1917, being 19.5 per cent greater than 1918, and resulting in the highest marriage rate in the history of state registration in California, 12.0 marriages per 1000 population.

On account of lack of clerical help, the detailed analysis of marriages has not been made. The totals for each county are given, together with rates.

TABLE No. 1. Births, Deaths and Marriages, with Increase and Rate per 1,000 Estimated Population for California: 1906 to 1919.

Year	Total	Increase		Rate per 1000 estimated population
		Number	Per cent	
Births:				
1919	56,521	500	1.1	17.5
1918	55,922	3,602	7.1	18.0
1917	52,230	1,592	3.1	17.2
1916	50,688	2,568	5.3	17.2
1915	48,075	2,008	4.5	16.8
1914	46,012	2,160	4.9	16.7
1913	43,852	4,522	11.5	16.4
1912	39,330	4,502	12.9	15.2
1911	34,829	2,690	8.4	14.0
1910	32,139	1,256	4.1	13.4
1909	30,882	2,906	10.1	13.4
1908	28,077	3,408	12.3	12.7
1907	24,674	3,700	17.6	11.6
1906	20,974			10.3
Deaths:				
1919	45,901	11,692	Decrease	14.2
1918	37,683	15,599	37.1	18.5
1917	42,084	2,224	5.6	18.9
1916	39,800	884	2.1	13.5
1915	39,029	1,489	4.0	13.7
1914	37,537	1,062	2.8	13.6
1913	36,509	1,890	5.1	14.4
1912	36,709	2,697	7.9	14.2
1911	34,012	1,614	5.0	13.7
1910	32,398	1,413	4.6	13.5
1909	30,985	302	1.0	13.4
1908	31,287	192	0.6	14.1
1907	31,095	1,792	6.1	14.6
1906	29,303			14.4
Marriages:				
1919	38,880	6,343	19.5	12.0
1918	32,437	3,790	Decrease	10.4
1917	36,283	5,287	17.1	11.9
1916	30,969	455	1.4	10.5
1915	31,451	451	1.4	11.0
1914	31,902	519	1.7	11.5
1913	31,383	107	0.3	11.7
1912	31,276	3,973	14.6	12.1
1911	27,303	2,366	9.5	11.0
1910	24,937	2,020	8.3	10.4
1909	22,917	1,178	5.4	9.9
1908	21,739	1,269	5.5	9.8
1907	23,005	1,688	7.9	10.8
1906	21,317			10.5

**TABLE No. 2. Births and Deaths by Month of Occurrence (Stillbirths Excluded)
California: 1918 and 1919.**

Month	Births		Deaths		Month	Births		Deaths	
	1918	1919	1918	1919		1918	1919	1918	1919
Total	55,922	56,521	57,683	45,991	July	4,864	4,364	3,165	3,206
January	4,575	4,578	3,706	8,051	August	4,966	4,301	3,181	2,981
February	4,172	4,043	3,613	3,572	September	4,914	4,721	3,107	2,886
March	4,646	4,084	3,938	4,019	October	4,802	5,066	3,736	3,224
April	4,551	4,555	3,886	3,720	November	4,344	5,260	9,790	3,497
May	4,872	4,907	3,671	3,572	December	4,435	5,420	7,389	3,996
June	4,781	4,632	3,501	3,349					

TABLE No. 3. Median Age at Death, California.

Year	Median age (half older and half younger)	Year	Median age (half older and half younger)
1912	48.9	1916	52.5
1918	40.6	1915	51.8
1917	52.0	1914	49.6

REPORT OF THE STATE BOARD OF HEALTH.

TABLE No. 4. Births, Deaths and Marriages for Counties and Cities with Estimated Population and Rates, California: 1918 and 1919.
(Stillbirths excluded.)

County or city	1918					1919								
	Esti- mated popu- lation	Rate per 1000 estimated population			Esti- mated popu- lation	Rate per 1000 estimated population								
		Births	Deaths	Mar- riages		Births	Deaths	Mar- riages						
Total.....	3,113,846	55,922	57,683	32,487	18.0	18.5	10.4	3,234,909	56,521	48,991	38,830	17.5	14.2	12.0
Alameda.....	361,417	571	930	3,067	15.7	26.3	9.8	35,963	573	539	3,790	15.9	22.3	10.6
Alameda city.....	29,134	483	419		16.6	14.4		29,886	506	387		16.9	11.3	
Berkeley.....	62,201	900	646		14.2	11.0		61,575	693	572		12.7	8.2	
Oakland.....	214,216	3,765	3,215		17.6	15.0		222,017	3,539	2,664		17.3	12.0	
Alpine.....	339		3	1		10.0	3.2		2	5	1	6.5	16.2	3.2
Amador.....	5,486	107	148	17	11.0	16.3	1.9	9,049	95	115	41	10.5	12.3	4.5
Butte.....	3,762	492	522	186	13.8	14.6	5.3	56,763	490	380	272	13.3	9.5	7.4
Calaveras.....	9,171	90	88	25	10.0	9.6	2.7	9,171	66	82	24	7.2	8.9	2.6
Colusa.....	8,087	140	140	32	17.4	17.4	4.0	8,075	156	97	50	19.3	12.0	6.2
Contra Costa.....	33,776	545	556	258	16.1	16.5	6.0	34,330	740	373	384	16.0	10.1	8.7
Del Norte.....	9,276	389	210		36.7	27.0		9,543	359	168		34.5	17.6	
Richmond.....	2,427	52	19	54	21.5	7.8	22.2	2,428	31	31	85	12.8	12.8	14.4
El Dorado.....	7,492	96	122	32	12.8	16.3	4.3	7,492	104	108	34	13.9	14.4	4.5
Fresno.....	60,390	1,600	1,062	900	24.4	15.3	8.5	71,988	1,754	934	1,337	24.4	13.0	12.1
Fresno city.....	37,670	965	663		25.6	18.1		39,028	951	537		24.4	13.8	
Glenn.....	8,856	186	134	66	21.0	15.1	7.1	9,062	165	91	47	18.2	10.0	5.2
Humboldt.....	23,972	337	274	269	14.1	8.5	6.5	24,068	293	207	341	12.2	8.6	8.5
Eureka.....	15,600	285	262		18.3	16.8		16,759	293	233		16.4	14.5	
Imperial.....	17,836	697	618		39.1	34.1	16.2	18,354	804	516	416	43.8	28.1	22.7
Inyo.....	9,131	38	56	53	4.2	6.1	5.8	9,248	91	94	58	9.7	2.5	6.2
Kern.....	37,154	503	267	412	13.5	9.9	7.4	38,608	582	286	585	13.8	7.4	9.3
Bakersfield.....	18,212	366	618		32.8	33.9		18,981	583	370		28.2	19.6	
Kings.....	21,519	483	319	174	22.4	14.8	8.1	22,164	445	225	214	20.1	10.2	9.7
Lake.....	7,528	65	88	35	11.8	15.0	4.5	8,526	87	78	23	15.7	14.1	4.2
Lassen.....	7,265	122	107	58	16.8	14.7	7.3	7,564	113	74	82	14.9	9.8	11.0
Los Angeles.....	104,998	2,881	3,127	7,063	27.0	29.8	8.9	109,187	2,851	2,637	9,290	26.1	24.3	11.2
Alhambra.....	8,254	96	106		11.3	12.8		8,649	108	107		12.5	12.4	
Los Angeles.....	567,156	8,797	9,417		15.5	16.7		668,881	9,186	7,662		15.3	12.8	
Long Beach.....	30,739	780	675		23.8	22.0		32,315	1,097	674		24.7	20.9	
Pasadena.....	52,700	687	560		12.1	10.8		55,990	690	578		11.8	10.3	
Pomona.....	14,198	246	181		17.5	12.8		14,572	247	186		16.9	12.0	
Santa Monica.....	11,828	187	280		15.8	20.2		12,313	186	231		15.1	18.8	

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Madera	8,368	214	112	112	35.6	18.4	13.5	299	104	141	27.0	12.4	10.9
Marin	25,292	176	258	553	12.4	10.2	16.8	174	163	580	6.7	7.4	17.4
San Rafael	7,642	85	127		12.4	11.1		86	83		10.9	10.6	
Mariposa	3,966	28	44	8	7.1	16.6	2.0	37	28	5	9.4	7.1	1.3
Mendocino	26,505	359	484	143	18.3	18.1	5.3	369	383	180	13.2	14.1	5.9
Merced	21,176	391	239	127	16.8	22.9	6.0	414	313	182	18.9	9.7	8.3
Modoc	7,117	82	46	42	11.5	6.5	5.9	72	58	62	10.0	8.0	8.6
Mono	2,042	2	2		1.0	1.0				2			1.0
Monterey	28,106	485	400	241	17.2	14.2	8.6	453	336	286	15.8	11.4	8.3
Napa	15,438	97	516	286	6.3	33.4	12.7	152	469	286	7.9	30.1	12.9
Napa city	7,150	127	187		17.8	26.2		164	181		20.7	17.9	
Nevada	14,955	170	215	43	11.4	14.4	2.9	142	201	88	9.5	13.4	5.9
Orange	34,354	863	712	1,259	25.1	20.7	26.9	883	451	1,511	24.3	13.6	31.4
Santa Ana	12,335	326	296		26.4	16.7		279	225		22.0	17.7	
Placer	20,276	321	267	74	13.8	14.2	3.6	347	256	106	12.2	9.0	3.7
Plumas	5,761	65	116	21	11.3	20.1	3.6	66	68	31	11.3	11.7	3.6
Riverside	21,962	492	391	526	18.3	12.4		442	307	768	16.1	11.2	15.6
Riverside city	20,324	292	339		14.2	16.5		27,290	335	322	15.8	15.2	
Sacramento	14,926	475	283	1,215	31.8	17.6	14.1	430	243	1,551	28.6	16.1	17.6
Sacramento city	71,073	1,277	1,749		17.3	24.0		1,424	1,239		19.5	17.2	
San Benito	9,213	189	132	84	20.6	16.5	9.1	181	109	81	19.3	11.7	8.7
San Bernardino	47,189	684	983	734	14.1	20.8	9.1	773	589	996	15.9	12.0	11.9
Redlands	15,146	143	122		9.4	8.1		148	115		9.4	7.3	
San Bernardino city	18,267	410	568		22.4	27.8		498	367		22.6	19.4	
San Diego	25,468	492	740		15.8	29.1	23.6	460	415	1,526	17.5	15.8	17.2
San Diego city	30,464	1,462	1,644		25.3	27.7		62,576	1,354	1,111	21.6	17.9	
San Francisco	478,534	8,441	10,067	6,290	17.6	21.0	13.1	8,433	7,080	6,808	17.4	16.4	14.1
San Joaquin	26,368	637	564	849	24.2	21.4	13.4	654	517	1,029	24.2	19.1	15.8
Stockton	37,090	917	1,348		24.7	36.4		799	877		21.1	23.1	
San Luis Obispo	14,736	295	161	188	18.0	10.9	8.7	238	141	251	16.1	9.5	11.4
San Luis Obispo city	6,932	123	138		17.6	19.9		126	146		17.6	20.4	
San Mateo	38,032	539	752	661	13.7	19.5	17.1	40,009	501	451	12.5	11.2	11.4
Santa Barbara	14,183	373	254	355	26.3	17.9	11.8	10,560	407	251	20.8	11.8	11.9
Santa Barbara city	15,874	401	286		25.2	18.0		16,388	381	274	23.2	16.7	
Santa Clara	62,206	1,066	1,433	1,174	17.6	23.0	11.4	63,659	1,105	1,370	15.0	15.3	13.0
San Jose	40,718	735	597		18.1	14.6		41,626	657	482	15.8	11.6	
Santa Cruz	14,387	294	235	285	20.2	16.7	9.4	14,792	238	184	16.1	12.4	11.0
Santa Cruz city	15,706	194	185		10.5	12.4		16,262	123	185	7.6	11.4	
Shasta	20,223	255	423	106	12.6	20.9	5.2	20,386	217	227	10.6	11.1	6.8
Sierra	4,167	30	33	1	7.1	7.9	3	4,175	22	57	5.3	13.6	1.7
Siskiyou	20,328	357	346	197	17.6	17.0	9.7	20,514	301	217	14.7	10.6	9.1
Solano	16,251	225	231	273	13.8	14.2	9.0	16,254	240	294	14.8	10.2	9.6

*Exclusive of cities listed within the county.
†Marriages are stated for the county as a whole.

TABLE No. 4. Births, Deaths and Marriages for Counties and Cities with Estimated Population and Rates, California: 1918 and 1919. (Stillbirths Excluded)—Continued.

*County or city	Esti- mated popu- lation	1918				1919			
		Births	Deaths	Mar- riages	Rate per 1000 estimated population	Births	Deaths	Mar- riages	Rate per 1000 estimated population
Vallejo	14,145	329	387		22.6	344	391		28.7
Sonoma	40,321	422	571	421	10.5	431	568	509	10.5
Petaluma	7,549	131	96		17.2	171	126		22.1
Santa Rosa	8,708	163	178		18.6	201	187		23.0
Stanislaus	23,708	768	502	276	32.8	866	455	419	34.2
Sutter	6,692	141	98	28	21.1	125	82		18.7
Tehama	11,736	217	192	92	18.5	234	172	118	19.9
Trinity	3,301	32	40	11	9.7	19	29	8	5.8
Tulare	49,424	1,003	610	315	21.4	1,087	642	445	21.2
Thuburn	4,979	87	160	47	8.8	125	105	50	12.5
Ventura	21,637	579	518	212	26.3	566	361	332	26.6
Yolo	14,182	808	206	106	51.7	292	308	125	20.5
Yuba	4,230	70	55	112	16.3	44	48	116	10.1
Marysville	7,087	141	191		20.0	146	115		20.2
					27.1				15.9

*Exclusive of cities listed within the county.
†Marriages are stated for the county as a whole.

TABLE No. 5. Infant Mortality and Birth Registration Data, California, 1906 to 1919.

Year	Total live births	Deaths under one year	Deaths under one year per 1000 live births	Deaths at all ages	Deaths under one year per 1000 deaths at all ages	Excess of births over deaths per cent.
1919 -----	56,521	3,976	70	45,991	86	22.9
1918 -----	55,922	4,081	83	57,683	81	-----
1917 -----	52,230	4,081	78	42,064	97	24.1
1916 -----	50,638	3,677	73	39,860	92	27.0
1915 -----	48,075	3,570	74	39,026	92	23.2
1914 -----	46,012	3,964	86	37,537	106	22.6
1913 -----	43,852	4,336	99	38,569	112	13.6
1912 -----	39,330	3,942	100	36,709	108	7.1
1911 -----	34,828	3,528	101	34,012	104	2.4
1910 -----	32,138	3,727	116	32,368	115	-----
1909 -----	30,882	3,480	113	30,986	112	-----
1908 -----	28,077	3,502	128	31,287	115	-----
1907 -----	24,674	3,422	139	31,065	110	-----
1906 -----	20,974	3,347	160	29,303	114	-----

TABLE No. 6 Births in Counties and Cities, by Sex, Race and Maternal Nativity, California: 1918. (Stillbirths excluded.)

*County or city	Total live births	Sex			White				Negro	Indian	Chinese	Japa- nese	Other
		Male	Female	Total	Male	Female	Maternal nativity						
							Calif. formis	Other states					
Total	55,992	28,827	27,005	50,986	26,221	24,765	16,979	19,987	14,070	282	43	413	4,218
Alameda	571	294	277	522	269	254	217	68	217			1	45
Alameda city	483	273	210	431	247	187	209	111	114	3			46
Berkeley	900	482	418	841	443	398	331	343	167	4	1	2	52
Oakland	3,765	1,908	1,857	3,591	1,892	1,769	1,487	1,174	980	20		51	108
Alpine													
Amador	100	54	46	100	54	46	56	14	30	2			
Butte	492	252	240	475	242	233	210	207	58		1	2	12
Calaveras	90	45	45	89	45	44	53	21	15		1		
Colusa	140	77	63	114	65	49	70	29	13			3	23
Contra Costa	545	290	255	518	268	250	170	86	262			1	20
Richmond	339	170	169	325	161	164	113	110	102				14
Del Norte	52	30	22	50	28	22	26	17	7		2		
El Dorado	96	58	38	91	56	35	60	23	8				5
Fresno	1,690	900	789	1,421	759	682	287	608	528	2		4	299
Fresno city	965	488	477	889	468	469	290	392	297	4		15	57
Glenn	186	99	90	179	92	87	75	78	26				7
Humboldt	337	175	162	324	169	155	109	52	103		13		
Eureka	295	145	140	285	145	140	133	66	63				
Imperial	697	372	325	613	324	289	98	303	198	10			74
Inyo	36	16	22	37	16	21	18	3	3				1
Kern	563	281	272	495	226	230	108	318	69			3	6
Bakersfield	598	317	281	573	303	270	133	298	137	4		5	16
Kings	488	250	233	439	231	208	150	147	142	5		6	38
Lake	65	36	29	64	35	29	45	14	5		1		
Lassen	123	66	56	121	65	56	54	44	23				1
Los Angeles	2,831	1,465	1,366	2,322	1,207	1,075	418	1,106	693	4			545
Alhambra	98	47	46	91	45	46	17	61	13			3	
Los Angeles	8,797	4,521	4,276	7,929	4,098	3,893	1,373	4,442	2,214	114	3	27	724
Long Beach	700	334	336	701	380	321	89	531	81				27
Pasadena	667	335	302	609	322	287	94	408	117	10			19
Pomona	246	130	120	243	125	119	42	167	34				3
Santa Monica	187	102	85	180	95	85	24	117	89	2			5
Madera	214	91	123	211	91	120	72	85	54		1		2
Marin	176	95	81	172	91	81	85	25	64				4

San Rafael	96	51	44	94	51	49	46	15	33	1	1
Mariposa	28	12	15	27	12	15	21	5	1	1	1
Mendocino	359	190	166	349	187	162	215	62	72	1	5
Merced	391	196	205	375	190	195	134	96	145	1	15
Modoc	82	46	36	90	46	34	48	27	5	1	1
Mono	2	2	2	2	2	2	2	1	1	1	1
Monterey	486	242	243	383	190	168	210	84	99	9	92
Napa	97	45	52	93	45	43	42	30	21	4	4
Napa city	127	70	57	124	70	54	64	37	23	3	3
Nevada	170	108	67	166	100	66	90	33	84	4	4
Orange	863	440	423	770	399	381	156	400	214	1	92
Santa Ana	396	162	164	322	169	169	76	189	57	4	4
Placer	321	169	162	219	106	112	92	60	66	4	99
Plumas	65	38	27	63	38	25	33	27	3	1	1
Riverside	402	203	199	389	195	194	88	206	95	3	10
Riverside city	292	151	141	271	141	130	49	151	71	2	15
Sacramento	475	251	224	219	111	108	111	62	46	18	238
Sacramento city	1,277	632	645	1,073	529	544	512	313	243	21	178
San Benito	189	96	93	158	80	78	94	31	38	1	30
San Bernardino	664	333	331	651	325	326	105	277	269	1	12
Redlands	143	84	59	136	80	56	32	74	30	1	6
San Bernardino city	410	211	199	398	206	190	98	197	111	3	11
San Diego	402	214	186	381	203	178	91	202	98	2	13
San Diego city	1,503	731	722	1,450	749	701	275	940	3	4	36
San Francisco	8,441	4,355	4,086	7,980	4,103	3,877	3,559	1,656	2,795	1	174
San Joaquin	687	333	304	600	237	223	176	172	112	21	231
Stockton	917	496	451	784	396	388	387	251	146	1	4
San Luis Obispo	265	137	128	246	136	120	123	75	49	2	19
San Luis Obispo city	123	63	60	123	63	60	70	39	14	3	21
San Mateo	580	287	243	504	275	239	178	104	224	2	42
Santa Barbara	373	184	189	329	160	169	149	89	92	2	21
Santa Barbara city	401	201	200	378	189	189	132	142	104	2	8
Santa Clara	1,096	580	516	634	470	455	375	235	324	3	154
San Jose	735	359	376	684	383	361	285	192	247	4	3
Santa Cruz	294	169	125	262	110	92	162	90	60	3	90
Santa Cruz city	164	86	78	159	86	73	77	48	84	1	4
Shasta	255	129	129	251	125	126	149	72	31	4	1
Sierra	30	15	15	30	15	15	23	3	4	1	1
Siakiyou	357	188	169	355	186	169	150	123	82	1	4
Solano	295	133	92	172	103	69	77	34	61	4	49
Vallejo	380	161	169	313	166	157	189	117	87	1	2
Sonoma	423	231	191	393	215	181	195	98	103	2	39

*Exclusive of cities listed within the county.

TABLE No. 6. Births in Counties and Cities, by Sex, Race and Maternal Nativity, California: 1918. (Stillbirths excluded)—Continued.

*County or city	Total live births	Sex		White				Negro	Indian	Chinese	Japa- nese	Other
		Female	Male	Total	Female	Maternal nativity						
						Calif. female	Other states						Foreign
Petaluma	130	59	71	130	59	71	75	27	28			
Santa Rosa	163	80	83	159	77	82	91	39	29		4	
Stanislaus	788	461	327	759	385	374	222	305	172	1	26	
Sutter	141	68	73	129	61	68	60	46	13		11	
Tahama	217	130	87	212	126	86	97	101	14	1	3	
Trinity	32	15	17	32	15	17	30	1	1			
Tulare	1,063	512	551	997	481	516	285	524	188	1	65	
Tuolumne	87	47	40	87	47	40	49	19	19			
Ventura	579	297	282	545	281	264	177	201	167		33	
Yuba	308	147	161	259	118	141	147	60	52	1	47	
Yuba	64	18	46	59	18	41	32	25	2	1	4	
Marysville	147	77	70	130	68	62	79	31	16	5	21	

* Exclusive of cities listed within the county.

TABLE No. 7. Births in Counties and Cities by Sex, Race and Maternal Nativity, California: 1919. (Stillbirths excluded.)

County* City	Sex			Sex			Maternal nativity				Race			
	Total		Total	Male		Female	Calif. formia	Other states	Foreign	Negro	Indian	Chinese	Japa- nese	Other
	Male	Female												
Total.....	20,450	27,005	51,316	26,794	24,522	16,530	20,022	75	14,705	257	25	485	4,456	50
Alameda.....	312	291	603	292	287	294	75	230	3	3			41	
Alameda city.....	248	257	505	228	243	213	144	114					34	
Berkeley.....	462	421	883	436	401	319	353	164		3		1	43	
Oakland.....	2,048	1,791	3,839	1,865	1,701	1,507	1,132	997		23	2	57	120	1
Alpine.....	2	2	4			1								
Amador.....	95	45	140	50	44	52	11	31			1			
Butte.....	403	285	688	246	222	205	202	61		3	2	3	14	
Calaveras.....	60	26	86	30	28	35	20	10		1				
Colusa.....	74	82	156	63	72	86	29	20		1		1	19	
Contra Costa.....	284	275	559	258	256	170	103	241		4			41	
Richmond.....	329	151	322	174	148	114	100	99					7	
Del Norte.....	31	14	31	17	14	17	9	5						
El Dorado.....	104	60	164	60	41	64	30	7					3	
Fresno.....	1,754	843	2,597	1,432	702	284	629	539		3		6	288	
Fresno city.....	911	424	1,335	750	377	281	328	263		2		7	90	
Glenn.....	105	77	182	72	85	65	71	21		2	1	1	4	
Humboldt.....	203	147	350	146	145	145	55	51			1			1
Eureka.....	283	120	403	119	142	141	62	58			2			
Imperial.....	804	377	1,181	350	327	66	383	228		19			168	1
Inyo.....	91	44	135	41	45	35	38	13					5	
Kern.....	582	228	810	304	220	130	315	79		1			7	
Bakersfield.....	533	288	821	279	237	130	243	131		4		3	10	
Kings.....	445	199	644	224	177	117	154	130				6	38	
Lake.....	87	41	128	45	39	50	30	4		1	1			1
Lassen.....	113	73	186	71	41	54	41	17		1				
Los Angeles.....	2,851	1,359	4,210	1,203	1,085	384	1,201	703		7		1	565	
Alhambra.....	108	65	173	62	44	21	67	18					2	
Los Angeles.....	9,136	4,695	13,831	4,214	3,992	1,317	4,486	2,403		118	2	35	772	3
Long Beach.....	707	338	1,045	401	372	105	500	108				1	23	
Pasadena.....	680	371	1,051	355	276	77	424	130		2			27	
Pomona.....	247	109	356	136	107	50	157	36					4	
Santa Monica.....	186	91	277	136	87	32	118	33					3	
Madera.....	236	119	355	117	108	68	87	65		1		2	3	
Marin.....	174	92	266	82	89	72	39	60					3	

*Exclusive of cities listed within the county.

TABLE No. 7. Births in Counties and Cities by Sex, Race and Maternal Nativity, California: 1919. (Stillbirths excluded.)—Continued.

County* City	Sex		White			Race			
	Total live births	Male	Female	Total	Sex	Maternal nativity	Negro	Indian	Chinese
						Calif. form.	Foreign		
San Rafael	86	49	37	84	48	43	16		
Mariposa	37	22	15	35	21	20	11	1	1
Mendocino	369	185	174	360	180	170	59	3	1
Merced	414	228	185	383	230	173	138		
Modoc	72	35	37	72	35	41	27		
Mono									
Monterey	453	227	226	353	167	192	74		
Napa	124	72	52	121	71	55	35		
Napa city	162	88	64	151	89	62	89		
Nevada	142	68	74	139	68	71	21		
Orange	863	466	397	772	419	363	171		
Santa Ana	279	138	141	274	135	139	58		
Placer	347	184	163	244	129	115	112		
Plumas	68	33	35	64	31	33	77		
Riverside	442	233	209	425	224	201	74		
Riverside city	385	168	167	304	138	151	54		
Sacramento	480	227	203	191	110	81	99		
Sacramento city	1,424	753	671	1,172	617	565	372		
San Benito	181	87	94	145	74	92	21		
San Bernardino	773	395	378	705	389	112	893		
San Bernardino city	498	238	260	411	219	192	69		
Redlands	143	62	86	143	60	88	29		
San Diego	480	250	210	431	236	195	104		
San Diego city	1,354	672	682	1,303	646	687	256		
San Francisco	8,463	4,300	4,063	7,917	4,111	3,606	1,741		
San Francisco	654	346	308	463	238	225	180		
Stockton	799	419	380	637	351	309	194		
San Luis Obispo	293	137	101	222	128	94	57		
San Luis Obispo city	139	74	62	126	74	62	41		
San Mateo	501	259	242	478	249	229	173		
Santa Barbara	407	218	189	355	194	161	140		
Santa Barbara city	210	171	139	190	167	137	141		
Santa Clara	1,105	544	561	982	479	468	374		
Santa Clara	657	344	313	605	318	287	188		
San Jose	384	184	104	180	102	78	44		
Santa Cruz	298								

Santa Cruz city	123	58	65	136	58	65	54	45	24										
Shasta	217	120	97	214	118	90	120	55	33										
Sierra	22	11	11	23	11	11	15	2	5										
Slakiyou	301	149	152	235	147	143	109	100	86	1								4	
Solano	240	115	125	197	92	105	77	46	74									38	
Vallejo	344	168	178	331	159	172	158	129	49									10	
Sonoma	431	222	209	401	209	192	201	94	106	2								98	1
Petaluma	171	85	86	170	84	87	87	37	46									1	
Santa Rosa	201	104	97	194	100	94	100	58	36									1	
Stanislaus	859	430	423	823	415	408	240	388	193									32	
Sutter	129	62	64	113	57	56	47	46	20									12	1
Tehama	224	126	108	228	122	108	115	91	22									3	
Trinity	19	9	10	19	9	10	17		2										
Tulare	1,087	561	528	999	580	479	273	538	188									80	8
Tuolumne	125	58	67	125	58	67	71	22	32										
Ventura	596	298	298	553	295	298	169	188	190									31	
Yolo	292	153	139	238	128	110	127	57	54									53	
Yuba	44	27	17	40	26	14	27	10	3									4	
Marysville	146	79	67	110	54	56	57	35	18	6								28	

*Exclusive of cities listed within the county.

TABLE No. 8. Summary of Deaths in Counties and Cities by Class of Causes (Stillbirths excluded). International List of Causes of Death. California: 1918

*County City	I. all ages 1 to 59	II. Newborn system 60 to 70	III. Circulatory system 71 to 85	IV. Respiratory system 86 to 98	V. Digestive system 99 to 118	VI. Genito- urinary system 119 to 133	VII. Puerperal state 134 to 141	VIII. Skin, etc. 142 to 145	IX. Bones, etc. 146 to 149	X. & XI. Malforma- tions and early infancy 150 to 153	XII. Oblique 154	XIII. External causes 155 to 186	XIV. Ill defined or unknown. 187 to 189
Total	57,683	25,310	4,437	7,020	3,983	3,769	371	129	69	2,075	371	4,123	40
Alameda	856	483	82	133	69	56	5	8	3	25	12	46	1
Alameda city	419	169	41	76	41	29	22	1	1	19	1	19	
Berkeley	6,66	268	61	124	36	37	6		2	34	7	40	
Oakland	3,215	1,372	258	483	420	198	30	1	3	125	12	205	1
Alpine	3			1		2,25	30						
Amador	148	71	8	7	13	20	1			4	2	14	
Butte	322	247	42	74	42	25	4	1		24	4	37	
Calaveras	88	41	3	4	9	6		1		4		15	
Colusa	140	38	15	11	18	7	6			9	2	13	1
Contra Costa	556	299	31	22	15	28	21	4	1	18		52	1
Richmond	250	134	9	23	27	10	12	2		14		15	1
Del Norte	19	0	1	1	1	1				2		8	
El Dorado	122	27	14	22	12	13	1			3	3	17	
Fresno	1,022	484	45	97	110	106	8	2	2	67	4	75	
Fresno city	683	294	30	61	62	83	5	1		38	1	53	
Glenn	134	63	12	19	6	4	10			13		7	
Humboldt	204	64	26	23	21	3				16	4	24	
Eureka	262	112	27	25	17	18	3	1		7	2	27	1
Imperial	608	385	16	26	61	54	8	1		32		67	
Inyo	56	25	6	4	4	3				1	2	5	
Kern	387	183	12	26	36	17	10	2		29	1	47	2
Bakersfield	618	321	30	45	58	43	5		1	23	1	45	
Kings	310	170	15	25	26	10	17	1		21	8	19	1
Lake	83	30	10	13	5	7	1				1	7	
Jassen	107	49	11	4	12	10				4	1	11	
Los Angeles	3,127	1,293	273	428	333	234	16	4	1	123	10	167	1
Alhambra	106	35	11	17	8	7				4	3	13	
Los Angeles	9,417	4,254	677	1,066	918	789	69	24	10	200	62	374	3
Long Beach	675	285	72	116	35	63	3		2	19	13	42	2
Pasadena	569	293	67	102	42	66	3	2		7	5	16	
Pomona	181	65	17	19	24	12	1	1		5	2	15	
Santa Monica	229	100	13	24	12	13	1		1	2	1	29	

Madera	112	34	10	18	14	8	8	1	1	4	1	18
Marin	258	120	10	46	34	11	11			6	1	19
San Rafael	127	58	16	14	12	7	7	1		2		10
Mariposa	44	11	3	4	6		2			2		9
Mendocino	484	238	43	40	34	30	30	1	2	11	5	34
Merced	239	114	12	22	27	12	11	2	1	16	1	21
Modoc	46	20	4	6	6	3	2	1		3	1	1
Mono	2	2										
Monterey	400	144	31	65	44	25	28	1	2	20		33
Napa	516	182	65	127	74	23	14	2	1	2		26
Napa city	187	73	7	28	15	7	39	1	1	3		13
Nevada	215	86	19	39	19	12	18			7		16
Orange	712	335	61	53	53	61	41	6	2	30	6	48
Orange	206	88	29	21	12	17	11	1	1	14	1	11
Santa Ana	287	167	11	22	22	15	11	1		5	6	27
Placer	116	60	6	3	13	4	2	1	1	3	3	18
Plumas	391	198	21	40	41	28	14	4		22	2	29
Riverside	329	160	37	86	30	19	15	1	1	10	8	28
Riverside city	283	99	18	30	31	11	11	3		7		41
Sacramento	1,709	882	84	149	212	95	101	15	1	67	11	110
Sacramento city	1,709	882	84	149	212	95	101	15	1	67	11	110
San Benito	122	67	10	15	13	13	15	1		8		10
San Bernardino	983	434	165	88	57	70	41	6	3	28	6	53
San Bernardino city	508	271	20	24	73	48	33	4	3	25	1	21
Redlands	122	45	10	20	10	15	8			7	2	2
San Diego	740	387	47	68	68	28	39	4	2	20	6	88
San Diego city	1,614	675	131	257	194	102	110	12	3	76	6	103
San Francisco	10,067	4,554	615	1,363	1,215	515	689	50	23	201	48	735
San Francisco	244	222	41	39	61	31	47	8	6	20	3	66
San Joaquin	1,348	585	55	120	26	63	58	9	2	40	11	74
Stockton	161	52	16	27	16	11	8	1		12	2	16
San Luis Obispo	138	59	11	27	12	14	3			4		8
San Luis Obispo city	138	59	11	27	12	14	3			4		8
San Mateo	732	249	35	65	291	27	25	2	3	9	4	111
Santa Barbara	254	102	25	37	24	14	22	2	1	8		29
Santa Barbara city	283	107	39	63	13	19	22	1	3	14	1	15
Santa Clara	1,433	551	217	212	119	82	102	8	1	48	11	81
Santa Clara	567	213	78	71	61	45	54	2	3	19	1	37
San Jose	243	91	18	48	19	17	18	1	1	7	2	20
Santa Cruz	195	53	26	65	11	12	16	1		2	1	8
Santa Cruz city	423	232	27	45	38	15	14	3	1	14	1	26
Shasta	383	5	7	5	3	3	25	4	2	16	7	35
Sierra	346	163	9	22	33	10	25			10	5	24
Siskiyou	231	85	18	33	25	19	8	1	1	8	1	19
Solano	387	212	24	39	51	21	8	3	1	16	9	45
Vallejo	571	246	62	67	65	29	29	1	2			
Sonoma												

* Exclusive of cities listed within the county.

TABLE No. 8. Summary of Deaths in Counties and Cities by Class of Causes (Stillbirths excluded). International List of Causes of Death, California: 1918.—Continued.

*County City	General diseases..... 1 to 59	Nervous system..... 60 to 76	Circulatory system..... 77 to 85	Respiratory system..... 86 to 98	Digestive system..... 99 to 118	Genito- urinary system..... 119 to 133	Puerperal state..... 134 to 141	Skin, etc..... 142 to 145	Bones, etc..... 146-149	Malforma- tions and early infancy 150 to 153	Old age..... 154	External causes..... 155 to 186	Ill defined or unknown..... 187 to 189
Petaluma	96	15	15	12	6	13	1	1	1	3	4	2	2
Santa Rosa	178	12	23	14	15	17	2	2		7		12	
Stanislaus	402	35	57	59	44	35	7	2		16		47	
Sutter	98	4	5	8	3	8				6	3	9	
Tehama	192	65	30	19	15	9	4	1		13	1	16	3
Trinity	40	18	10	1	1	3				1		7	
Yuba	100	37	44	61	39	30	4	3		52	9	61	1
Fulcrum	160	10	11	23	5	14	2			1	3	36	
Tuolumne	315	16	38	68	46	27	4			31	3	19	2
Ventura	293	25	32	28	16	14	1			8	1	39	1
Yolo	55	6	9	5	2	2			1	1	1	9	1
Yuba	55	20	5	2	2	2				1	1	1	
Marysville	191	12	10	25	8	12	4	1		9	1	8	

*Exclusive of cities listed within the county.

TABLE No. 9. Summary of Deaths by Sex, Race and Nativity (Stillbirths Excluded) with per cent for Each Class of Causes. California, 1919.

Cause of death	Per cent of total	Sex		Total	Sex		White				Race				
		Male	Female		Total	Male	Female	Maternal nativity		Un- known	Negro	Indian	Chinese	Japa- nese	Other
								California	Other states						
All causes	100.0	57,083	21,773	54,024	33,530	20,498	15,072	30,296	17,108	1,558	791	318	981	1,545	24
1. General diseases	43.9	25,310	9,742	23,616	14,455	9,161	6,929	8,375	7,736	576	361	183	400	734	16
2. Nervous system	7.7	4,487	1,873	4,212	2,403	1,809	606	2,210	1,286	111	68	11	51	95	
3. Circulatory system	12.2	7,020	2,719	6,759	4,065	2,674	629	3,294	2,646	200	74	18	125	43	1
4. Respiratory system	10.9	6,280	2,293	5,759	3,673	2,116	1,899	1,901	1,822	176	77	37	155	225	6
5. Digestive system	6.4	3,683	1,538	3,410	1,970	1,440	1,471	1,126	765	48	49	17	66	141	
6. Genito-urinary system	6.5	3,766	1,162	3,595	2,474	1,121	568	1,602	1,390	45	70	7	65	29	
7. The puerperal state	0.6	371	571	940	340	119	119	134	96	1	7	8	2	19	
8. Diseases of the skin	0.2	129	61	121	77	44	23	59	38	2	2	1	2	3	
9. Diseases of the bones	0.1	69	23	65	42	23	23	30	16	1	1			3	
10. Malformations	0.5	314	198	294	184	110	293	1			1	2	2	15	
11. Diseases of early infancy	3.1	1,761	1,036	1,594	939	645	1,580	3	1		30	9	14	123	1
12. Old age	0.6	371	183	353	181	172	3	199	144	7	1	7	10		
13. Affections produced by ex- ternal causes	7.1	4,123	880	3,854	3,080	824	929	1,364	1,174	387	49	22	85	112	
14. Ill defined or unknown	0.1	40	30	32	23	9	14	9	5	4	1		4	3	

TABLE No. 9½. Summary of Deaths by Age (Stillbirths Excluded) for Each Class of causes. California, 1918.

Cause of death	Age							
	Under 1 yr.	1 to 4 yrs.	5 to 14 yrs.	15 to 24 yrs.	25 to 34 yrs.	35 to 44 yrs.	45 to 54 yrs.	55 to 64 yrs.
All causes.....	4,681	2,537	1,928	4,908	9,516	7,982	6,090	6,421
1. General diseases.....	762	1,948	1,000	3,414	6,813	4,777	2,644	2,112
2. Nervous system.....	81	96	114	114	205	397	537	903
3. Circulatory system.....	9	20	86	106	228	475	764	1,287
4. Respiratory system.....	783	544	198	582	861	696	555	616
5. Digestive system.....	900	383	140	188	226	317	427	442
6. Genito-urinary system.....	4	29	42	111	218	389	490	684
7. The puerperal state.....	12	2	8	111	175	82	3	3
8. Diseases of the skin.....	5	4	4	4	2	8	18	17
9. Diseases of the bones.....	291	19	4	9	10	6	8	4
10. Malformations.....	1,761							
11. Diseases of early infancy.....								
12. Old age.....								
13. Affections produced by external causes.....	71	177	287	454	746	755	628	3
14. Ill defined or unknown.....	2	15	2		2		5	6
Unknown.....								13,308
65 years and over.....								2,431
								2,093
								4,042
								1,482
								709
								1,818
								63
								13
								308
								698
								8

TABLE No. 12. Summary of Deaths by Sex, Race and Nativity (Stillbirths Excluded) with per cent for Each Class of Causes, California: 1919.

Cause of death	Per cent of total	Sex			White				Race				
		Total		Female	Total	Maternal nativity			Negro	Indian	Chinese	Japanese	Other
		Male	Female			California	Other states	Foreign					
All causes	100.0	45,991	18,572		43,220	11,296	17,959	13,344	651	216	806	1,113	24
1. General diseases	85.7	16,428	7,067		15,233	4,056	6,290	4,740	147	106	302	504	8
2. Nervous system	9.4	4,325	2,417	1,906	4,189	597	2,156	1,377	59	33	9	42	2
3. Circulatory system	16.9	7,773	4,610	3,163	7,487	741	3,719	2,006	121	83	13	156	24
4. Respiratory system	8.3	3,811	2,253	1,558	3,563	1,218	1,245	1,061	39	54	24	70	100
5. Digestive system	7.2	3,302	1,901	1,401	3,070	1,301	1,006	744	19	33	10	55	126
6. Genito-urinary system	7.2	3,304	1,960	1,344	3,152	424	1,492	1,004	32	55	8	66	2
7. The puerperal state	0.8	370	370	370	346	114	148	83	1	1	2	19	
8. Skin and cellular tissue	0.2	112	66	46	107	31	47	29		2	2	1	
9. Bones and organs of locomotion	0.2	81	52	29	77	21	35	21	1			3	
10. Malformations	0.7	386	209	127	320	308	11	1		1	8	6	
11. Early infancy	3.6	1,651	937	714	1,500	1,492	8		20	4	12	114	1
12. Old age	0.9	406	197	209	390	8	218	154		10	12		
13. External causes	8.7	3,682	3,065	897	3,065	933	1,352	1,154	226	38	21	79	11
14. Ill defined or unknown	0.2	110	71	39	101	22	32	40	7	2	2	5	

TABLE No. 13. Summary of Deaths in Counties and Cities by Class of Cause. International List of Causes of Death. California, 1919

*County City	Total	I. General diseases 1 to 59	II. Nervous system 60 to 76	III. Circulatory system 77 to 85	IV. Respiratory system 86 to 98	V. Digestive system 99 to 118	VI. Genito- urinary system 119 to 133	VII. Puerperal state 134 to 141	VIII. Skin, etc. 142 to 145	IX. Bones, etc. 146 to 149	X & XI. Malforma- tions and early infancy 150 to 153	XII. Old age 154	XIII. External causes 155 to 186	XIV. Ill defined or unknown 187 to 189
California	45,991	16,428	4,325	7,773	3,811	3,302	3,304	370	112	61	1,987	406	3,583	110
Alameda	889	321	76	151	77	55	50	3	3	2	25	29	47	1
Alameda city	337	115	32	69	24	24	21	4	2	2	18	28	28	
Berkeley	572	167	79	129	52	41	38	4	5	2	16	2	34	
Oakland	2,694	887	261	517	955	168	182	24	2	7	125	16	213	5
Alpine	5	1					1	2						
Amador	115	40	4	18	10	4	12	1	1		7	4	15	
Butte	350	111	30	68	40	28	18	3			17	5	30	
Calaveras	82	31	8	11	4	11	4				2	2	9	
Colusa	97	38	14	17	10	6	2				1		11	
Contra Costa	353	114	25	59	33	23	16	2	1		15		62	3
Richmond	168	60	13	12	21	13	12	2			12		23	
Del Norte	31	6	3			3	4			1	2	1	5	
El Dorado	108	25	10	34	7	6	14				3		9	
Fresno	984	357	77	114	67	90	41	16	1	1	56	8	100	6
Frano city	537	195	39	65	53	55	34	7		2	39	1	43	5
Glenn	91	35	14	17	8	7	4		1		3	1	11	
Humboldt	307	71	11	39	15	13	12	1	1		8	4	29	3
Eureka	233	71	27	41	20	18	28	1	2	1	6	1	17	
Imperial	516	230	23	20	42	49	14	9		1	37	2	85	1
Inyo	24	4	3	4	1	4	2		4		1		4	2
Kern	286	120	14	35	13	13	9	3		1	23	3	53	
Bakersfield	370	138	28	42	30	41	20	7		1	23	1	38	1
Kings	225	88	21	20	9	26	15	3			19	4	19	1
Lake	78	20	10	10	11	7	1		2		8		9	
Lassen	74	20	4	4	14	4	3	1			6		8	
Los Angeles	2,657	946	306	500	103	204	184	7	6	2	96	19	192	2
Alhambra	107	89	13	19	10	7	9				2	1		
Los Angeles	7,662	3,006	596	1,196	478	572	683	61	25	20	350	69	597	16
Long Beach	674	162	80	129	52	62	86	5	2	2	31	12	42	
Pasadena	578	208	61	116	35	38	60	7	1		23	9	28	
Pomona	188	84	16	21	19	12	15	3			7	4		

*Exclusive of cities listed within the county.

TABLE No. 13. Summary of Deaths in Counties and Cities by Class of Cause. International List of Causes of Death. California, 1919.

—Continued.

*County City	Total	I. General diseases. 1 to 59	II. Nervous system. 60 to 76	III. Circulatory system. 77 to 85	IV. Respiratory system. 86 to 98	V. Digestive system. 99 to 118	VI. Genito- urinary system. 119 to 133	VII. Furberal state. 134 to 141	VIII. Skin, etc. 142 to 145	IX. Bones, etc. 146 to 149	X. & XI. Malforma- tions and early infancy. 150 to 153	XII. Old age. 154	XIII. External causes. 155 to 186	XIV. Ill defined or unknown. 187 to 189
Santa Monica	231	75	17	50	16	10	28	8	1	1	9	1	21	2
Madera	104	81	15	12	11	8	6	1	1	1	8	1	13	1
Marin	198	56	30	33	24	6	10	1	1	1	6	1	24	1
San Rafael	88	27	7	16	9	2	2	1	1	1	3	1	5	1
Mariposa	28	4	4	3	4	1	2	1	1	1	3	1	9	1
Mendocino	388	118	48	80	83	24	25	3	3	1	9	6	21	2
Merced	218	78	16	23	22	17	9	1	1	1	9	2	21	2
Modoc	56	22	10	4	4	1	3	3	1	1	4	1	6	1
Monro	826	101	30	67	24	30	24	8	1	1	15	4	25	2
Monterey	469	110	81	126	51	31	39	2	2	1	2	4	24	1
Napa	131	51	13	23	6	13	6	1	1	1	2	1	14	1
Nevada	201	72	24	32	13	16	19	2	1	1	8	1	12	1
Orange	481	190	46	54	34	56	27	7	3	1	23	4	43	3
Santa Ana	226	67	30	46	26	18	11	3	3	1	10	3	11	1
Placer	255	124	20	36	22	11	15	1	1	1	8	3	17	1
Plumas	69	29	6	9	2	2	3	1	1	1	1	4	13	1
Riverside	307	136	20	18	23	33	11	2	2	1	30	4	35	2
Riverside city	332	111	40	41	24	24	24	4	1	1	37	8	16	2
Sacramento	248	64	16	32	25	17	16	2	1	1	8	14	44	5
Sacramento city	1,269	437	116	179	120	102	94	9	4	1	57	19	130	1
San Benito	109	37	11	25	8	10	4	4	1	1	6	6	6	1
San Bernardino	883	201	115	79	39	43	31	3	1	2	39	5	40	1
Redlands	115	51	10	21	6	9	5	1	1	1	8	1	9	1
San Bernardino city	337	153	22	38	31	46	31	4	3	1	13	8	11	1
San Diego	415	138	39	61	28	31	33	1	1	2	24	7	49	2
San Diego city	1,111	357	103	311	75	79	37	10	2	2	62	10	103	2
San Francisco	7,980	2,080	563	1,461	745	496	596	51	17	13	250	42	645	2
San Joaquin	517	179	29	73	57	28	59	5	1	1	31	3	57	4
Stockton	877	231	139	125	97	59	56	13	1	2	30	2	66	6
San Luis Obispo	141	45	14	30	10	8	4	4	1	1	10	2	17	1
San Luis Obispo city	146	54	6	41	8	17	6	1	1	1	5	2	8	5

San Mateo	451	155	42	71	52	24	16	5				20	2	61	1
Santa Barbara	231	98	19	35	16	19	13	1				9	1	17	3
Santa Barbara city	274	94	37	60	14	19	14	3				15		18	
Santa Clara	1,130	339	167	235	91	70	79	3	2	1		43	9	86	5
San Jose	482	190	38	109	39	35	32	5	3	2		20	5	34	
Santa Cruz	184	52	16	43	21	11	9	2				11	2	17	
Santa Cruz city	185	65	27	49	13	7	9	1				5		9	
Shasta	227	85	10	46	19	8	21					9	3	23	
Sierra	57	24	8	6	8	2	8					1		10	
Siskiyou	217	64	20	38	13	14	13	4	1	2		14	3	31	
Solano	166	56	11	40	14	8	12	1				9	1	15	
Vallejo	261	86	25	42	24	15	16	6				10	2	32	2
Sonoma	568	183	82	101	53	34	31	2	2	1		22	3	50	4
Petaluma	125	34	10	18	16	5	15	1	1			7	5	12	2
Santa Rosa	187	72	19	29	13	19	11	3	1			6		14	
Stanislaus	455	172	39	69	35	27	29	10	1			23	3	42	1
Sutter	82	24	10	17	7	4	2					1	1	18	
Tehama	172	49	28	29	14	8	13	1				7	4	19	
Trinity	29	2	3	14	1	1	4						2	2	
Tulare	542	181	55	64	41	51	32	4	4			38	9	59	1
Tuolumne	105	34	8	15	14	8	7					5	1	13	
Ventura	381	127	25	43	44	43	23	2		1		25	2	43	1
Yolo	208	67	18	35	17	14	15	2				6	1	32	1
Yuba	48	11	6	8	5	7	1					3	1	7	
Marysville	115	29	18	23	16	7	5					3	1	12	1

*Exclusive of cities listed within the county.

TABLE No. 16. Deaths from Tuberculosis by Length of Residence in California.

Cause of death	Total	Under 1 month	1 to 3 months	4 to 6 months	7 to 11 months	1 to 4 years	5 to 9 years	10 years and over	Life	Unknown
1918										
28. Tuberculosis of lungs	5,888	140	218	161	141	706	812	1,945	1,573	162
29. Acute miliary tuberculosis	5,234	129	208	147	135	642	749	1,819	1,218	180
30. Tuberculous meningitis	69	1	2				5	13	82	
31. Abdominal tuberculosis	285	5	6	5	2	19	16	12	215	5
32. Pott's disease	150	2	2	8	3	19	16	43	54	3
33. White swellings	25	1			1	6	1	9	6	1
34. Tuberculosis of other organs	16			1		2	2	5	6	
35. Disseminated tuberculosis	83					5	10	36	29	3
	26	2				1	2	8	13	
1919										
28. Tuberculosis of lungs	5,679	113	213	148	125	720	845	1,985	1,437	143
29. Acute miliary tuberculosis	4,975	101	194	133	113	635	782	1,777	1,082	129
30. Tuberculous meningitis	35	1	2	3	1	10	10	27	40	1
31. Abdominal tuberculosis	339	6	7	7	5	16	10	40	210	8
32. Pott's disease	163	4	7	2	3	21	23	48	53	4
33. White swellings	27		3	1	1	2	2	7	10	
34. Tuberculosis of other organs	77	1		1			1	2	3	
35. Disseminated tuberculosis	21			1	1	5	10	26	31	1
						1	3	8	8	

TABLE No. 17. Deaths from Tuberculosis by Marital Condition of Decedents, 15 Years of Age and Over, California: 1918 and 1919.

	Total	Male					Female						
		Total male	Single	Married	Widowed	Divorced	Unknown or not stated	Total female	Single	Married	Widowed	Divorced	Unknown or not stated
1918	5,417	3,668	1,810	1,394	226	65	198	1,754	507	994	212	35	6
28. Tuberculosis of lungs	5,078	3,479	1,731	1,290	213	64	191	1,599	457	915	187	34	6
29. Acute miliary tuberculosis	48	23	9	11	1		2	25	10	13	2		
30. Tuberculous meningitis	60	33	14	18			1	27	9	16	2		
31. Abdominal tuberculosis	112	56	25	25	6			56	10	29	11		
32. Pott's disease	21	15	9	4	1		1	6	1	4	1		
33. White swellings	12	7	3	3	1			5	2	2			
34. Tuberculosis of other organs	68	40	17	15	4	1	3	28	10	12	5	1	
35. Disseminated tuberculosis	18	10	2	8				8	2	3	3		
1919	5,202	3,395	1,663	1,324	204	85	119	1,807	502	1,079	180	40	6
28. Tuberculosis of lungs	4,810	3,176	1,559	1,233	198	72	119	1,684	446	981	168	35	6
29. Acute miliary tuberculosis	71	33	15	14	1	3		38	10	24	2		
30. Tuberculous meningitis	89	55	24	28	1	4		34	17	15	1	2	
31. Abdominal tuberculosis	129	70	27	32	6	5		59	11	43	3	1	
32. Pott's disease	19	15	10	5				4	2		2		
33. White swellings	5	3	3					2		2			
34. Tuberculosis of other organs	62	36	19	13	3	1		26	13	8	5		
35. Disseminated tuberculosis	17	7	6	1				10	3	6	1		

SANITARY INSPECTIONS.**EDWARD T. ROSS, Chief Sanitary Inspector.**

The extensive clean-up operations undertaken in the extra cantonment zone at Camp Kearny, in cooperation with the army and local authorities, were continued through the months of July and August, 1918. As a result of these activities hundreds of premises, principally food supply establishments, were placed in sanitary condition and many hundreds of nuisances were abated.

Sanitary surveys were made of a number of cities and towns throughout the state. These surveys covered the inspection of food supply places, manufacturing establishments, slaughterhouses, canneries, hospitals, schools, theatres and in many instances water supplies and sewerage disposal systems. Sanitary surveys were also made of the shipyards and shipyard zones in Benicia, Alameda, Oakland, San Francisco, South San Francisco and Bay Point. The officials of the United States Shipping Board and local officials cooperated in work done for the improvement of sanitary conditions in these localities. Sanitary inspections were made of a large number of summer resorts and mountain camps in various parts of the state.

The months of September and October, 1919, were spent in Oakland and Berkeley, supervising the enforcement of measures instituted for the extermination of rodents to prevent the spread of plague. During the month of November trapping operations were carried on in San Francisco for the purpose of collecting rodents for examination for plague. In December, 1919, investigations were made of the rabies situation in Fresno and Tulare counties, and, in May and June, 1920, similar investigations were undertaken in Fresno and Kings counties.

SUMMARY OF OPERATIONS.**Camp Kearny.**

Practically all of the time spent in this extra cantonment zone was taken up in investigating conditions in food supply places, etc., in the city of San Diego. Reinspections were made of a large number of the places and in the majority of these all sanitary improvements had been made. At the time reinspections were made a medical officer from the Division Surgeon's office, was present and issued a sanitary certificate to the owners of places where all regulations had been complied with. This certificate indicated that the establishment was approved by the army authorities and permitted soldiers to patronize the same. During the time spent in the vicinity of Camp Kearny, sanitary surveys were made of three cities, thirteen health conferences were attended, over nine hundred and fifty premises were placed in sanitary condition and over two thousand nuisances were abated.

Shipbuilding Yards and Adjacent Territory.

Insanitary conditions were found in practically all of the shipyards, caused by lack of proper plumbing facilities. These conditions, however, were remedied as quickly as was possible. All food supply places located in the territory adjacent to the shipyards were inspected. The majority of these places were being operated in dilapidated shacks, without plumbing facilities of any kind. In many instances the food-stuffs were exposed on old tables and boxes in the streets. The owners of these places were given instructions as to needed sanitary improve-

ments, such as repairs to buildings, screenings of foods, general cleaning, etc. In the majority of cases these instructions were complied with. As a result of these operations over three hundred premises were placed in sanitary condition, sixty dilapidated shacks were demolished and over nine hundred nuisances were abated.

Plague Campaign, Bay Region.

During the first part of September, 1919, an outbreak of plague occurred in the city of Oakland. A cooperative campaign was organized for the extermination of rodents to prevent the spread of the disease. On September 18 the State Board of Health, at the request of the local officials, took over the supervision of all cooperative operations and placed their Chief Sanitary Inspector in charge. The city was divided into districts and a trapper placed in each district. A map showing the outlines of the districts, together with the name of the trapper assigned to each district and also a map showing the number of rats caught in each city block by months were kept in headquarters. A record of all rodents trapped was kept. This record shows the date, location and character of premises in which they were caught. A similar campaign was carried on in Berkeley at this time and during the month of November trapping operations were carried on in San Francisco.

Oakland operations—

Men employed	2 foremen, 18 trappers
Rats trapped	7,023
Rats found dead	38
Mice trapped	1476
Squirrels poisoned or shot (sent to laboratory)	313
Acres land treated with poison grain	18,000
Poison grain used	14,875 pounds
Miscellaneous premises inspected	2950

Berkeley operations—

Men employed	1 foreman, 4 trappers
Rats trapped	912
Mice trapped	179
Miscellaneous premises inspected	760

San Francisco operations—

Men employed	1 foreman, 4 trappers
Rats trapped	1065
Mice trapped	108
Poison placed (for rats)	54,000 pieces
Poison placed (for squirrels)	100 pounds
Miscellaneous premises inspected	800

The officials of the United States Public Health Service and the local officials cooperated in every way possible in this work.

Rabies Campaign.

In December, 1919, an investigation was made of the rabies situation in Fresno and Tulare counties. It was learned that rabies was prevalent over both counties. The matter was taken up with the boards of supervisors of both counties and control measures were recommended. As no action was taken by the supervisors the matter was again taken up in April, in Fresno County, in cooperation with the Bureau of Communicable Diseases, and on May 22 a state quarantine was placed on all dogs in that county. The supervisors immediately appointed six full-time deputies under the county health officer,

to carry out its provisions. A large number of quarantine notices were printed and distributed throughout the county. In the incorporated cities, the work was carried on by the police officials. This campaign was carried on during the months of May and June, 1920, and is still in operation. To date over two thousand stray dogs have been killed, taxes have been collected on over one thousand dogs, fifteen hundred quarantine placards have been posted and over five thousand small quarantine notices have been distributed. In June, 1920, the matter of dog control was taken up with the supervisors of Tulare County. A muzzling ordinance and a licensing ordinance were passed. After having posted about one thousand placards throughout the county notifying dog owners that their dogs must be muzzled and licensed, the supervisors repealed the muzzling ordinance and left only the licensing ordinance. As there had been only one positive case of rabies in the county since April, it was thought advisable to try this measure out, as it would, if properly enforced, materially cut down the dog population, which is the most important factor in the control of rabies. Since the licensing ordinance went into effect, several thousand dollars have been collected and a large number of stray and unlicensed dogs have been killed. The incorporated towns enforced the same type of ordinance as the county. The investigation made in San Joaquin County, in May, 1920, showed the situation to be quite serious. The matter of dog control was taken up with the board of supervisors, who passed an ordinance requiring all dogs to be muzzled when at large. In July all of the incorporated cities in the county adopted the same type of ordinance. While it is true that five hundred placards have been posted and some four hundred dogs have been killed the ordinance has not been rigidly enforced. This matter is again being taken up with the Supervisors. The investigation made in Kings County in June, 1920, showed that rabies was prevalent in certain sections of the county. The board of supervisors, on being informed of the situation, immediately authorized the county veterinarian, to enforce an old muzzling ordinance which was still on the books. They also authorized the employment of deputies to work under the supervision of the county veterinarian. A large number of placards and other notices were printed and distributed throughout the county. To date, over five hundred placards and other notices have been distributed and over eight hundred stray and unmuzzled dogs have been killed. This campaign is still in operation and excellent results are being obtained.

Oakland Sanitary Survey.

The months of May and June, 1919, were spent in Oakland investigating sanitary conditions in food supply places, dairies, slaughter-houses, canneries, packing houses, manufacturing establishments, hotels, rooming houses, shipbuilding yards, etc. This work was done in connection with the general sanitary survey made by the State Board of Health. During this time over five hundred such premises were inspected.

Miscellaneous Operations.

These operations were carried on in various parts of the state.

<i>Investigations—</i>	
Rabies	12
Mosquito	7
Rat	11
House boats above water supplies	17
Sanitary surveys made of cities and towns	9
Summer resorts inspected	20
Public camp grounds	62
Municipal auto camping grounds	6
Water supplies	11
Sewerage disposal systems	15
Water samples collected	17
Railway trains	14
Ferry and river steamers	20
Canneries (fruit, meat and fish)	19
Dairies	47
Milk depots	22
Slaughter houses	51
Reduction plants	7
Hog ranches	19
Road houses	30
Public schools	11
Hospitals	3
Jails	2
Miscellaneous premises (food supply, etc.)	409
Miscellaneous complaints investigated	55
Health conferences attended	9
Health notices posted	415
Health literature distributed (approximated)	3500
Sanitary reports submitted	71
Nuisances abated	668

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